DIGITAL AUDIO TAPE PLAYER

KDT-99/99R

SERVICE MANUAL

KENWOOD

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B51-3306-00(T)245

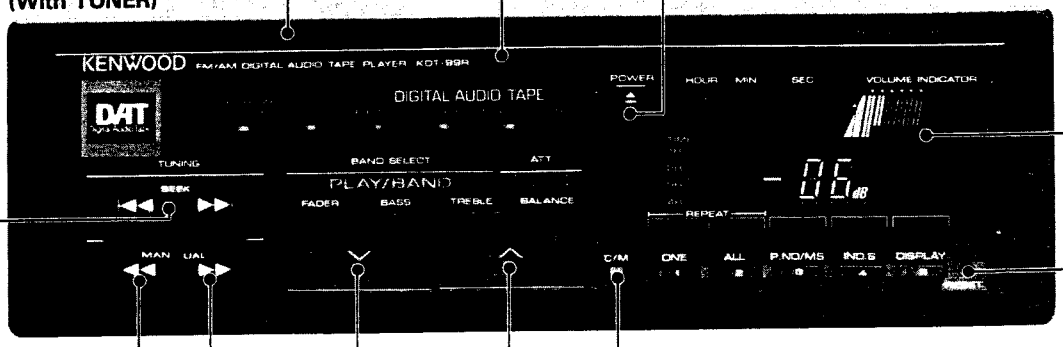
Panel escutcheon (B01-0373-03)

Panel ass'y (A20-5357-05)

Knob (EJECT) (K27-1881-08)

Front glass (B10-0937-08)

Photo is KDT-99R (With TUNER)



Knob (SEEK) (K27-1883-08)

Knob (REW) (K27-1867-08)

Knob (FF) (K27-1865-08)

Knob (DOWN) (K27-1873-08)

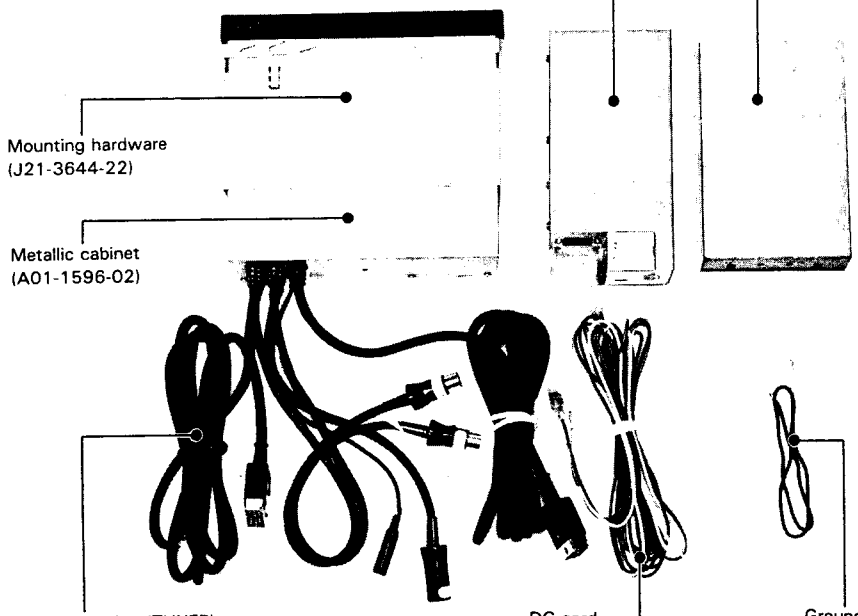
Knob (UP) (K27-1872-08)

Knob (C/M) (K27-1874-08)

Knob (RESET) (K27-1880-08)

Converter (W03-1475-05)

Tuner ass'y



Mounting hardware (J21-3644-22)

Metallic cabinet (A01-1596-02)

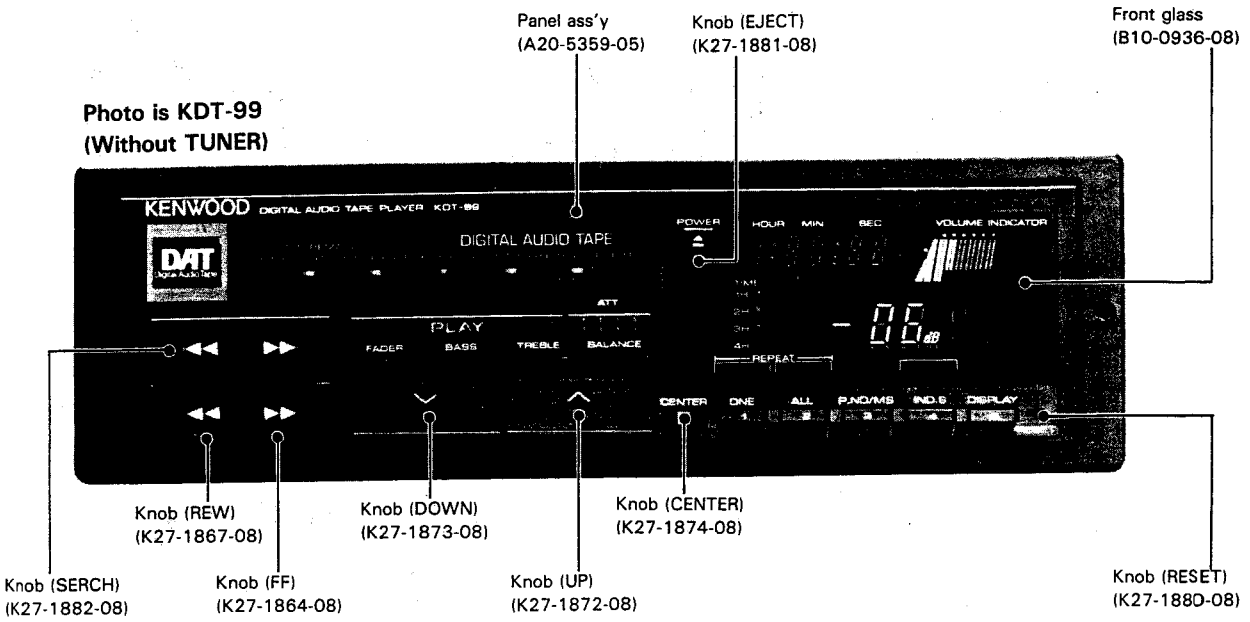
Cord with plug (TUNER) (E30-2262-05)

DC cord (E30-2268-15)

Ground wire (E30-0893-05)

This Service Manual does not contain descriptions of the basic principles of DAT, controls, indicators, circuits description, semiconductors data nor mechanism operations.
For these subjects, please refer to the Technical Manual (Digital Audio Tape Player).

* Refer to parts list on page 94



* Refer to parts list on page 94.

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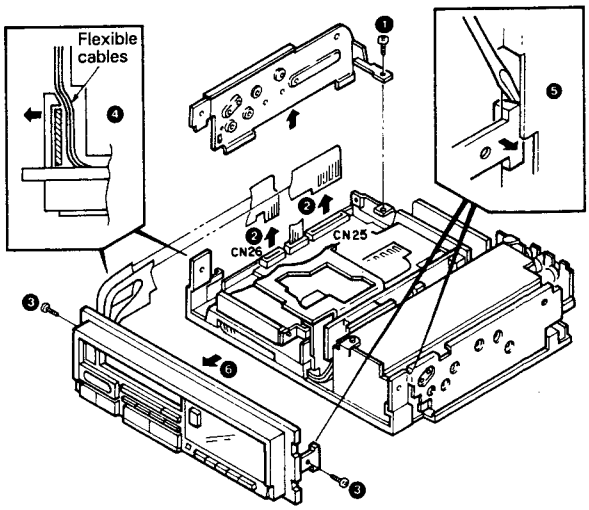
SPECIFICATIONS ..... Back cover

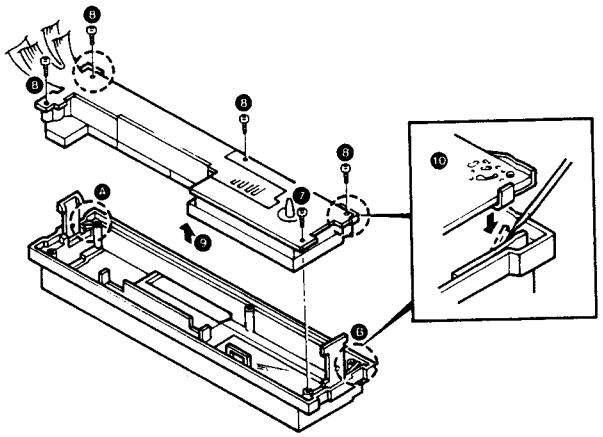
DISASSEMBLY FOR REPAIR

1. Remove the screw (❶) retaining the side panel.
2. Disconnect, from CN25 and CN26, the flexible cables coming from the Panel Ass'y (❷).
3. Remove the 2 screws (❸) fixing the Panel Ass'y.
4. Disengage the claw on the Panel Ass'y from the chassis (❹).
   (When attaching the panel, be careful of the flexible cables.)
5. Also disengage the claw on the right side of the Panel Ass'y (❺).
6. Remove the Panel Ass'y in the direction of the arrow (❻).

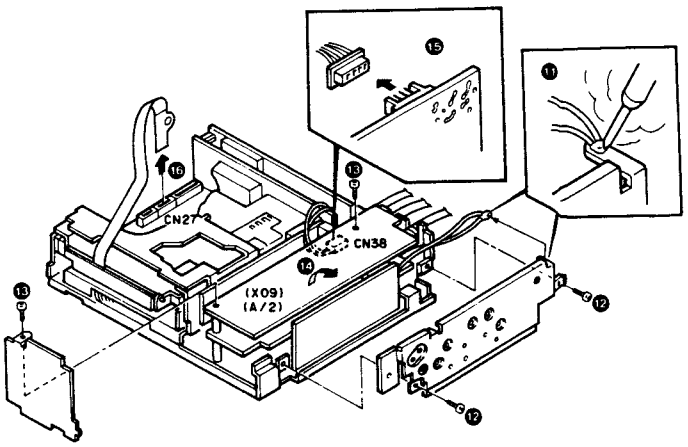


Removing PC Board from the Panel Ass'y

7. Remove the screw (❼) fixing the PC board.
8. Remove the other 4 screws (❽).
9. Remove the PC board (❾).
10. When attaching the PC board to the panel, insert the PC board while widening the grounding metals (Ⓐ , Ⓑ) on the two sides of the panel (❿).

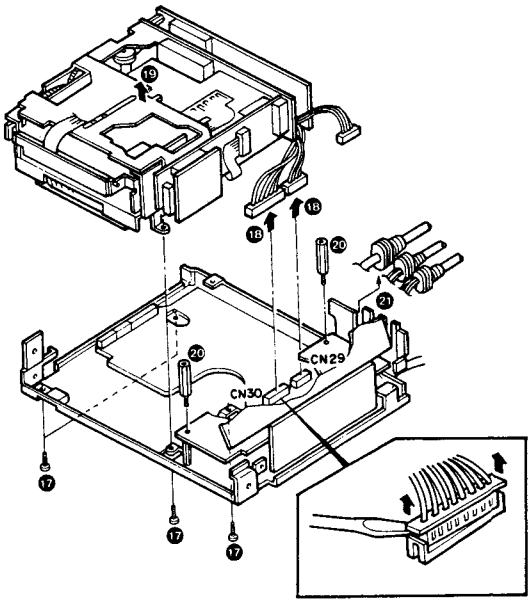


11. Remove the grounding wire soldered on the side panel (R) (⓫).
12. Remove the 2 screws (⓬) fixing the side panel (R).
13. Remove the 2 screws (⓭) fixing the X09-(A/2), and take out the shielding plate.
14. Stand the PC board up in the direction of the arrow (⓮).
15. Disconnect the cable of the Mechanism Ass'y from the connector (CN38). ⓯
16. Disconnect, from the PC board (CN27), the flexible cable coming from the Mechanism Ass'y (⓰).

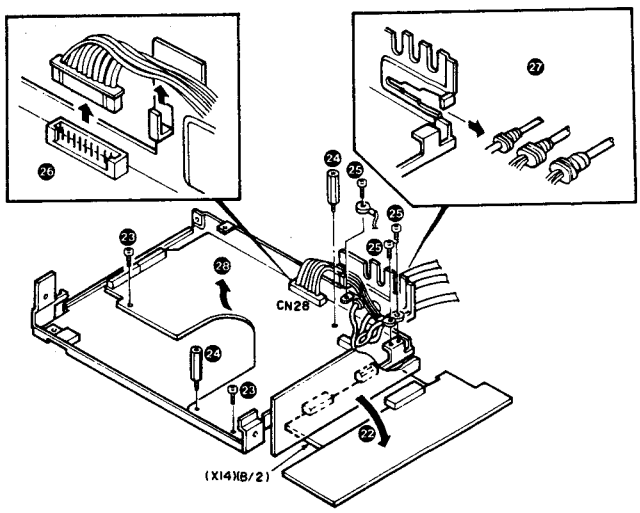


DISASSEMBLY FOR REPAIR

17. Remove the 4 screws (⑰) fixing the Mechanism Ass'y.
18. Disconnect the cables from the Mechanism Ass'y (⑱) from the connectors (CN29, CN30).
19. Take out the mechanism (⑲).
20. Remove the 2 hex bosses (⑳).
21. Remove the connection cords (㉑).



22. Tilt the X14-(B/2) unit in the direction of the arrow (㉒).
23. Remove the 2 screws (㉓) fixing the X14-(A/2).
24. Remove the 2 hex bosses (㉔) fixing the X14-(A/2).
25. Remove the 3 screws (㉕) fixing the grounding lug.
26. Disconnect the cable from the connector (CN28) on the X14-(A/2) (㉖).
27. Remove the 3 connection cords (㉗).
28. Take out the X14-(A/2) in the direction of the arrow (㉘).

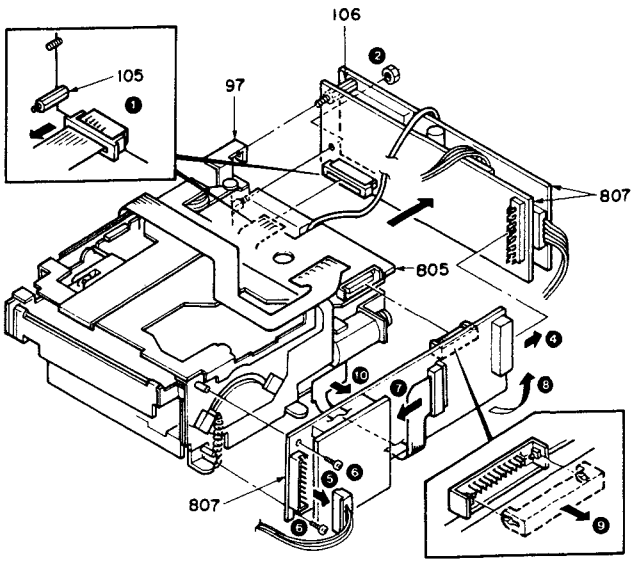


REMOVAL AND RE-PLACEMENT OF MECHANISM ASS'Y

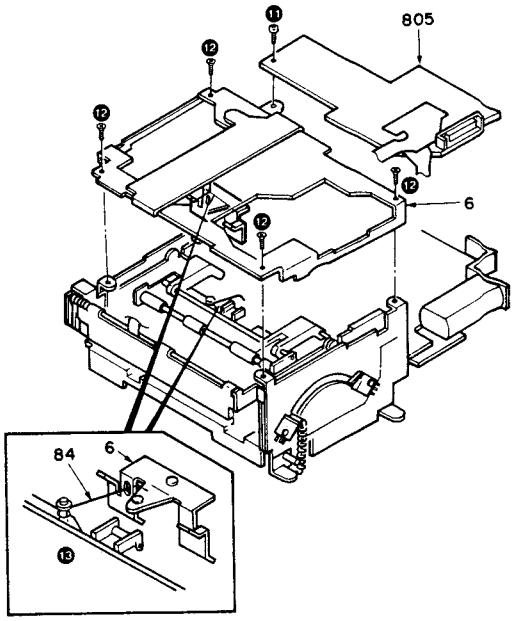
1. Disconnect, from the connector on the X29-(B/3), the flexible cable coming from the bottom side of the drum head (❶).
2. Remove the nut projected from the hex boss (105) on the other side of the X29-(B/3) (❷).
3. Remove the unit holder (97) and hex boss (106) (❸).
4. Disconnect the connectors (❹) on the X29-(B/3) and X29-(C/3). This allows to remove the X29-(A/3) and X29-(B/3) units on the rear side of the mechanism.
5. Disconnect the reel motor cable from the connector (❺).
6. Remove the 2 screws (❻) fixing the PC board unit.
7. Remove the flexible cable from the X29-(C/3) (❼).
8. Stand the X29-(C/3) unit in the direction of the arrow (❽).
9. Disconnect the connectors on the X13-5690 (C/3) and X29-(C/3) in the direction of the arrow (❾).

* **Re-placement**
When attaching the X-29 (C/3), be sure to hold it horizontally and align the groove. It cannot be attached otherwise.

10. Remove the flexible motor from the capstan motor (❿).

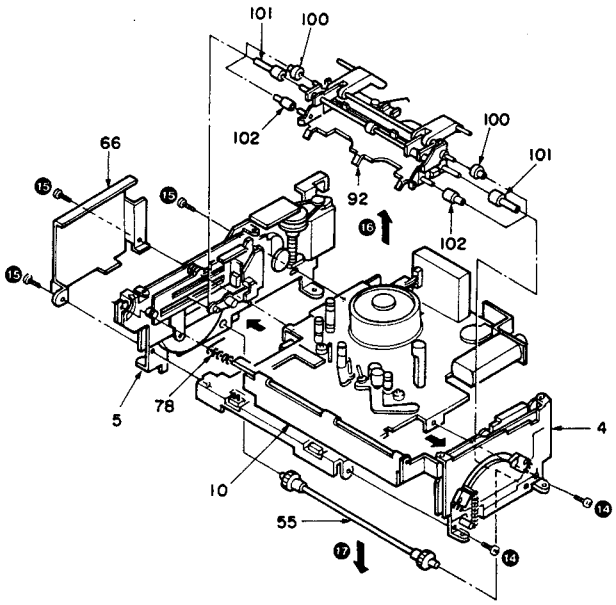


11. Remove the screw (⓫) fixing the X13-(C/3).
(Be careful because two flexible cables are attached to this unit.)
12. Remove the 4 countersunk screws (⓬) fixing the Chassis Caulking Ass'y (6).
13. A spring (84) from the Holder Ass'y (91) is inserted in the hole on the Chassis Caulking Ass'y (6). Remove the spring with care (⓭).



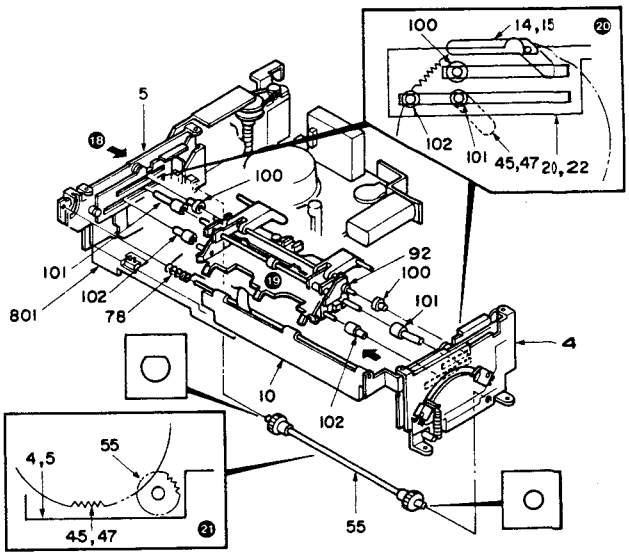
REMOVAL AND RE-PLACEMENT OF MECHANISM ASS'Y

14. Remove the 2 screws (⑭) fixing the gear chassis R (4).
15. Remove the 3 screws (⑮) fixing the cover (66) and gear chassis L (5).
16. Paying attention to the collars (100×2 pcs., 101×2 pcs., 102×2 pcs.) attached to the Holder Ass'y (92), remove the gear chassis L and R in the direction of the arrow (⑯).
    The gear chassis R (4) and LED display Ass'y (Door) (10) can be removed together. However, be careful aware of the spring (78) which is also removed with them.
17. When the gear chassis L and R are removed, the Shaft Ass'y (55) is also removed from the bottom side of the mechanism (⑰).

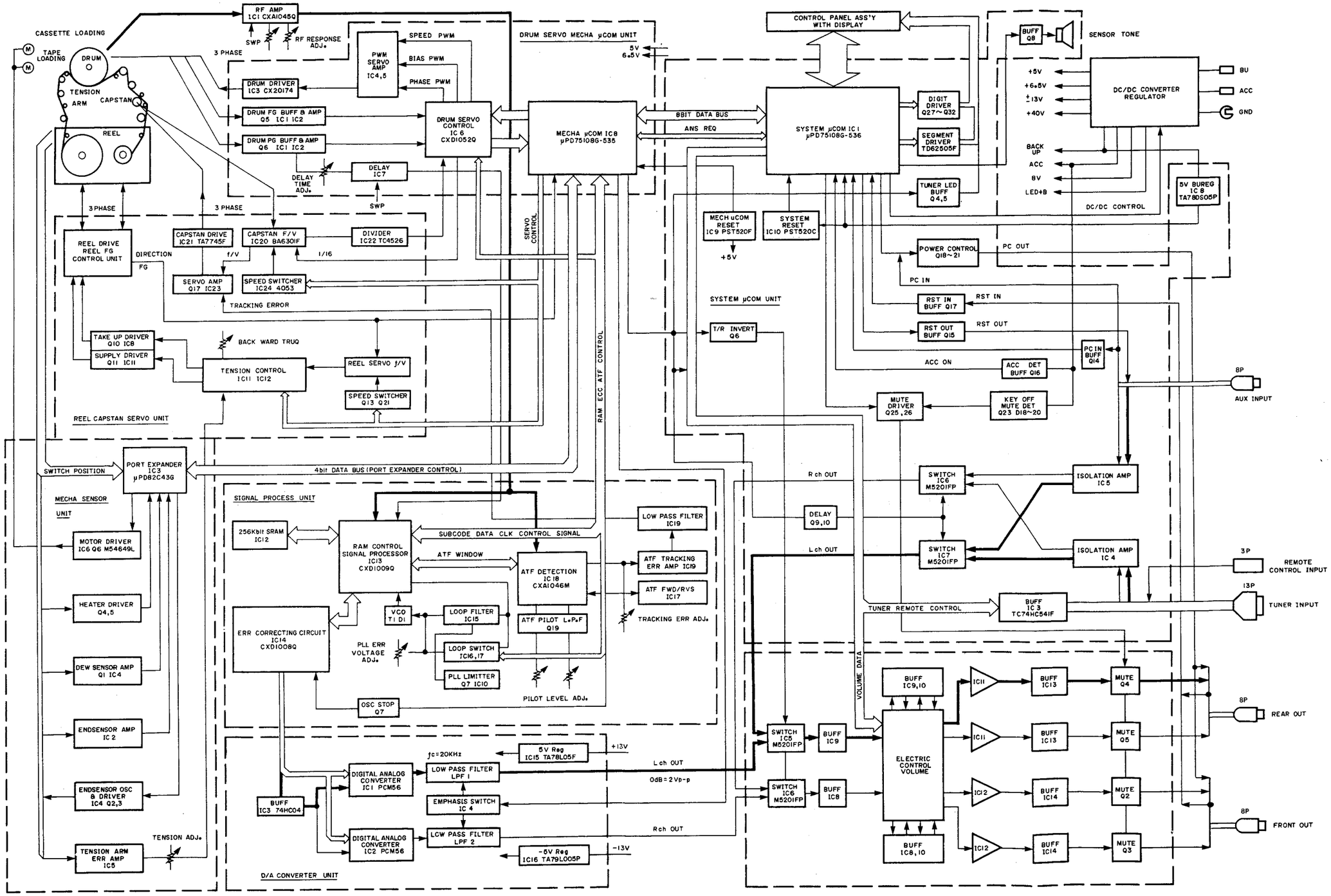


ATTACHING THE MECHANISM ASS'Y

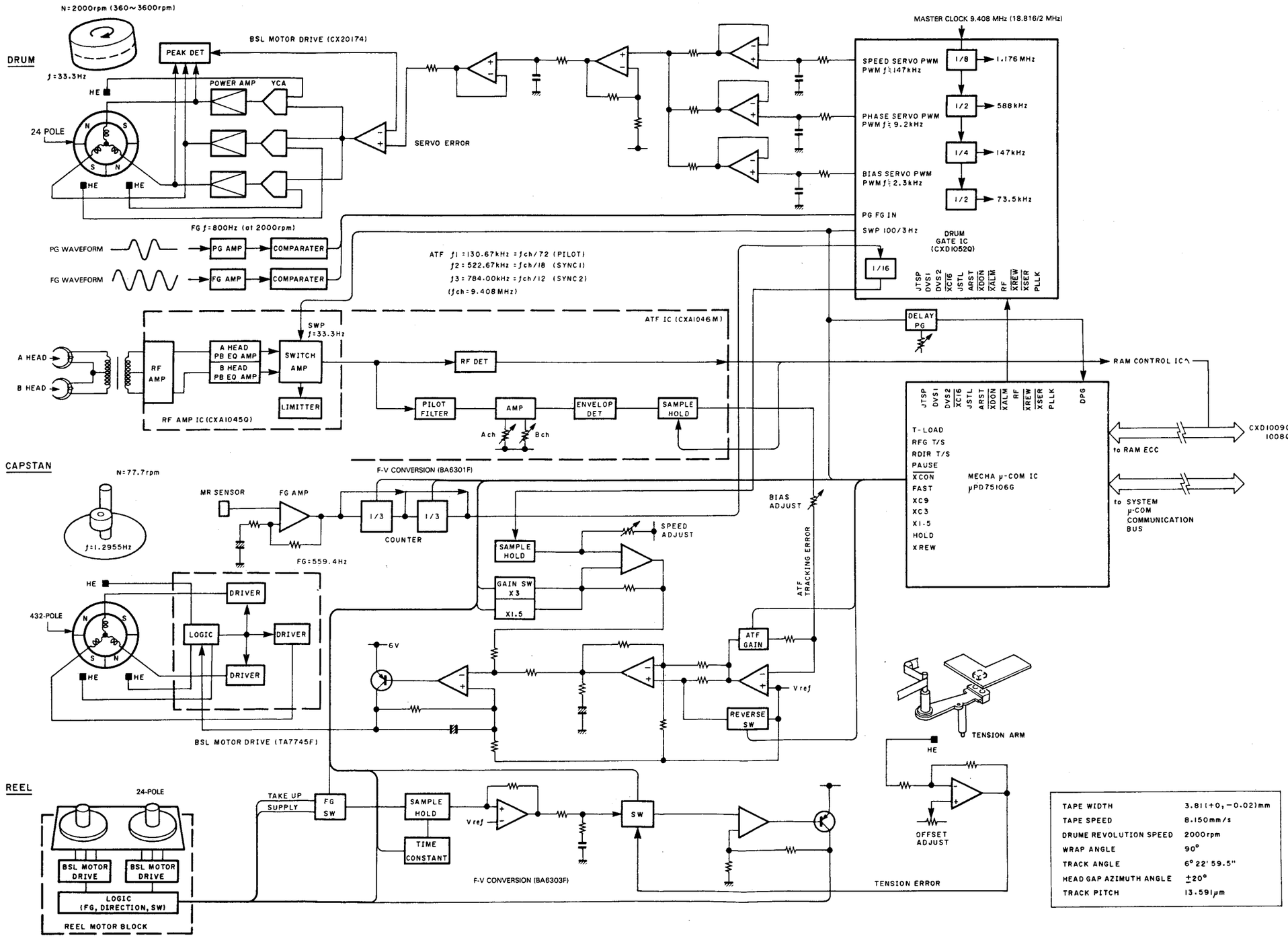
18. Fit the gear chassis L (5) temporarily to the chassis (801) (⑱).
19. Attach the collars (100×2 pcs., 101×2 pcs., 102×2 pcs.) to the Holder Ass'y (92) (⑲).
20. Insert the collars into the grooves of the guides L (22) and R (20). However, the collars (101) should be inserted into the grooves of the loading gear (47) in its ejection position.
    (If it is not in the ejection position, set to the ejection position by turning the motor (M1) pulley with your finger.)
21. Attach the Shaft Ass'y (55) between the Gear chassis R (4) and gear chassis L (5).
22. Tighten the 4 screws which has been fitted temporarily above.



BLOCK DIAGRAM



BLOCK DIAGRAM



TAPE WIDTH	3.81(+0, −0.02)mm
TAPE SPEED	8.150mm/s
DRUME REVOLUTION SPEED	2000rpm
WRAP ANGLE	90°
TRACK ANGLE	6° 22' 59.5"
HEAD GAP AZIMUTH ANGLE	±20°
TRACK PITCH	13.591μm

FUNCTIONS OF COMPONENTS

Audio unit (X09-2550-XX)

Component	Use/function	Operation/condition/compatibility
IC1	L CH D/A converter	Pin ⑤ : XBCK, pin ⑥ : $\overline{\text{LRCK}}$, pin ⑦ : RDATA, pins ⑨ and ⑩ : L CH analog output.
IC2	R CH D/A converter	Pin ⑤ : XBCK, pin ⑥ : $\overline{\text{LRCK}}$, pin ⑦ : RDATA, pins ⑨ and ⑩ : R CH analog output.
IC3	LRCK/$\overline{\text{LRCK}}$ signal generator	Pin ① : LRCK input, pin ④ : R CH LRCK output, pin ⑥ : L CH $\overline{\text{LRCK}}$ output.
IC4	Deemphasis ON/OFF	Pins ⑨, ⑩ and ⑪ "H" for deemphasis ON, "L" for OFF. The deemphasis characteristic is obtained by turning the capacitor connected to the LPF ON to the GND.
IC5	L CH DAT/AUX switching amp	Pin ⑦ : DAT, pin ② : AUX, pin ⑤ : Output, pin ① : Control. AUX is output when Q1 is ON and DAT is OFF.
IC6	R CH DAT/AUX switching amp	Pin ⑦ : DAT, pin ② : AUX, pin ⑤ : Output, pin ① : Control. AUX is output when Q1 is ON and DAT is OFF.
IC7	Electronic VR	Pin ⑮ : ST input, pin ⑱ : CK input, pin ⑲ : DATA input.
IC8	R CH tone/bass external connection and buffer amp	
IC9	L CH tone/bass external connection and buffer amp	
IC10	Buffer amp	
IC11	Rear output amp	
IC12	Front output amp	
IC15	+5 V 3-terminal regulator	
IC16	−5 V 3-terminal regulator	
Q1	DAT/AUX switching transistor	"H" for DAT, "L" for AUX.
Q2, 3, 4, 5	Audio muting transistors	"H" for muting ON.

Sub-circuit unit (X13-5690-00)

Component	Use/function	Operation/condition/compatibility
IC1	Head amp, PCM equalizer, limiter	The gain is approx. 53 dB, and the head frequency response is adjusted with an LPF. The A CH and B CH signals are output together. The PCM equalizer is used to compensate for the head characteristics. The limiter is used to limit the output amplitude to a level suitable for IC13.
IC2	End detector	Comparator.
IC3	Port expander	Multiplexer of various mechanism switches, end sensor, etc.
IC4 a/2 b/2	Dew detector Oscillator	Hysteresis comparator. Generates an approx. 1 kHz square wave for use by the end sensor.
IC5	Tension error amp	DC amp.
IC6	Motor driver	Forward/reverse rotation driver.
IC8	Reel motor controller	DC amp.
IC11, 12	Reel supply voltage switch	Outputs the voltage according to each mode. Also turns the reels ON and OFF as required.
IC13	Reel motor rotation control for FF/REW	Regulates the reel motor rotation speed within the specified speed for FF and REW. Assuming that the supply output at this time is FG, IC12 switches between RFGT and RFGS so that the rotation speed is constant.
Q1	Dew sensor buffer	The base goes "L" when the sensor is activated.
Q2	End sensor driver	Drives the end sensor LED.
Q3	Oscillator ON/OFF	Oscillation starts when the base goes "L".
Q4, 5	Heater ON/OFF	Q5 supplies power when the base of Q4 goes "H".

FUNCTIONS OF COMPONENTS

Component	Use/function	Operation/condition/compatibility
Q6	Motor voltage control	When the base goes "H", the voltage at pin 8 of IC6 drops, reducing the motor rotation speed.
Q10	Reel motor predriver	Predriver for takeup reel motor.
Q11	Reel motor predriver	Predriver for supply reel motor.
Q12	Reel motor voltage limiter	Sets the terminal voltage for takeup reel motor to 0 V during mode switching operations.

Synthesizer unit (X14-223X-XX)

Component	Use/function	Operation/condition/compatibility
IC1	System control	Controls the acceptance and indication of key inputs, transmits the control signals to the electronic VR or concealed tuner, and recognizes the signals from other units, such as power control, reset, etc.
IC2	Segment driver	Supplies current to the display (FL, LED) segments.
IC3	Buffer	Transmits or receives various control signals related to the tuner. Also receives the remote control data.
IC4	Isolation amp	A voltage follower which receives audio signal from the tuner.
IC5	Isolation amp	A voltage follower which receives audio signal from the AUX input.
IC6	Switch opamp	An opamp which functions as a switch to select the L CH input between tuner and AUX. Pin 1 "H" for tuner input.
IC7	Switch opamp	An opamp which functions as a switch to select the R CH input between tuner and AUX. Pin 1 "H" for tuner input.
IC8	3-terminal regulator	Regulated power supply of +5 V to the System μCOM.
IC9	Mechanism reset	Resets the Mechanism μCOM. The IC operates to reset it when the ACC +5 V supply drops below +3.6 V.
IC10	System reset	Resets the System μCOM. The IC operates to reset it when the BU +5 V supply drops below +4.5 V.
Q1	Transistor switch	Used to recognize that the tuner is connected.
Q2, 3	Inverter	Invert the logic of the signal from the tuner.
Q4, 5	Tuner LED driver	Light the tuner LED (with +10 V ON-OFF).
Q6	Inverter	Inverts the logic of the T/R signal.
Q8	Driver	Drives the piezoelectric buzzer. The drive voltage is ACC.
Q9, 10	Level converter, delay	Converts the level into that for the switching signal of the switch opamp, and delays the signal to prevent switching noise.
Q12, 13	Driver	Turn the DC/DC converter ON/OFF.
Q14~17	Level converter buffer	Converts the level of the control signal used to control other units and System μCOM.
Q18~21	Power control	Power control signal output circuit (max. 1 A).
Q22	Driver	Increases the speed for turning the power control OFF. At the time of key-OFF muting, turns the input to the power control circuit to help turning it OFF more quickly.
Q23	Key-OFF muting	At the time of key OFF, etc., turns muting ON when the ACC voltage drops below approx. 8 V.
Q24	Driver	Turns bandwidth limiting ON/OFF during the tuner seek operation.
Q25, 26	Muting driver	Generate the muting signal. "H" (BU voltage) for muting, and high impedance for muting OFF.
Q27~32	Digit driver	Lead in the digit current for the display LEDs.
Q33	Remote control data buffer	A buffer used exclusively with the E type. This is required because IC3 is not used with the E type.

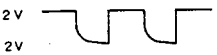
FUNCTIONS OF COMPONENTS

Control circuit unit (X29-1830-00)

Component	Use/function	Operation/condition/compatibility
IC1	PG/FG waveform shaper amp	Comparator.
IC2	PG/FG waveform shaper	Comparator with hysteresis. The final stage is open-collector.
IC3	Drum driver	3-phase motor driver.
IC4	Driver control signal LPF & buffer	LPF and buffer.
IC5	Speed-servo, phase-servo and bias-servo buffer	Voltage follower.
IC6	Drum servo, Signal generator of SWP, RF window signal, etc.	Generates SWP, etc., from FG and PG. Equipped with the speed-servo loop, phase-servo loop and bias-servo loop, and sends the PWM to the LPF in the 1st stage of the IC.
IC7	DPG generator	One-shot multivibrator which generates DPG from SWP.
IC8	Mechanism Control	Controls the mechanism based on the data and signals from the System Control.
IC10	PLL mis-lock prevention	Comparator.
IC12	Data memory	Inputs/outputs the data for IC14 according to the addresses from IC13.
IC13	ATF generator PLL circuit 8-10 converter Deinterleaving circuit	Extracts PB clock from the RF PB signal. Demodulator for 8-10 conversion. Determines the operation mode and sub-code processing in accordance with the Mechanism Control.
IC14	Error correction Fs timing signal output	Data correction and interpolation. DA serial data output.
IC15	PLL wave LPF & buffer	LPF and voltage follower.
IC16 IC17 c/4, d/4	Loop filter switch	DC potential memory circuit for A and B CH sync switching. A and B CH DC bias simultaneous switching during fast search.
IC17 a/4, b/4	Tracking error polarity switching	Inverts the tracking error polarity for REW operation.
IC18	RF detector ATF	ATF sync equalizer, pilot filter, tracking error detector. 130 kHz pilot signal extraction and sample & hold.
IC19 a/4 b/4 c/4 d/4	LPF Tracking error comparator & amp Vref buffer Tracking error polarity switching	12 dB LPF. Comparison with the reference voltage, and amplification. Voltage follower. Inverts the tracking error polarity for REW operation.
IC20	Capstan servo	FG servo.
IC21	Capstan driver	3-phase motor driver.
IC22	Counter	Division of capstan FG into 1/3 and 1/9.
IC23 a/2	Tracking error amp Tracking error signal buffer	Amplification of phase and frequency servo error. Voltage follower.
IC24	Time constant switching Reference voltage switching	Switches the time constant of the sawtooth wave. Switches the divider resistance.
Q1	Drum ON/OFF	When the base goes "L", pin 4 of IC3 is turned "H" to rotate the drum.
Q2	Drum brake ON/OFF	When pin 37 of IC6 goes "H", pin 5 of IC3 is turned "L" to brake the drum.
Q3, 4	IC heat radiation reduction circuit	Reduces the IC heat radiation by regulating the voltage at pin 13 of IC3 according to that at pin 12.
Q5	PG wave buffer & amp	Current-voltage conversion and amplification.
Q6	FG wave buffer & amp	Current-voltage conversion and amplification.
Q7	PLL mis-lock prevention	Switching transistor.
Q8	Temperature compensation	Temperature compensation of RF envelope waveform.
Q11	Reel motor driver	Drives the takeup reel motor.
Q12	Reel motor driver	Drives the supply reel motor.
Q13	Takeup reel lock	Turning the base "H" locks the takeup reel.
Q14~16	Capstan motor driver	Current driver.
Q17	Capstan motor power supply	Supplies the voltage according to the tracking error signal.
Q18	Current limiter	Limits the current flowing to the capstan motor.
Q19	Capstan ON/OFF	Turning the base "L" rotates the capstan.
Q20	Buffer	Capstan FG buffer.

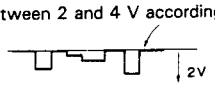
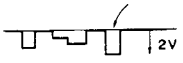
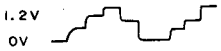
TERMINAL PIN FUNCTIONS

Mechanism sensor unit

Pin Name			Operation
CN1	①		"L" during Playback.
	②		During FF or REW, "L" when the tape is set on the head or separated from it.
	③		GND
CN6	⑦		Generates 910 Hz square wave at the end of tape.
	⑧		Generates 910 Hz square wave at the beginning of tape.
Flexible PC board	LOADING START		"H" after the start of loading.
	PACK IN		Generates an "L" pulse at the start of loading or at the end of ejection.
	LOADING END		"L" when the cassette leaf is set.
	E		The side connected to IC2 pin ⑤ : 0-2 V variation at the end of tape. The side connected to IC2 pin ③ : 0-2 V variation at the beginning of tape.
	C		DC 5 V
	K		GND
	A		
	LIMIT SW		"H" when the cassette shell is set.
	RICOGNITION	1	"L" when the cassette shell is set.
		2	Always "H".
		3, 4	Generates a 128 Hz pulse while no cassette shell is set.
IC2	②, ⑥		DC 0.8 V
IC4	①		0 V
	2		DC 5 V
	③		DC 2.5 V
	⑤		Around 910 Hz.
	⑥		Around 910 Hz.
	⑦		Around 910 Hz.
IC5	①		DC 0.9 V. 0 V during FF and REW.
	②, ③		DC 1.3 V
	⑤		DC 0.9 V. 0 V during FF and REW.
	⑥		DC 0.9 V
	⑦		Around DC 0.6 V. Around DC 2.6 V during FF and REW.
IC6	④		"H" for driving the tape loading motor.
	⑤		"H" for driving the loading motor.
	⑥		"H" for driving the tape loading motor loading motor in the loading direction.
Q3	B		"L" when the cassette shell is set.

TERMINAL PIN FUNCTIONS

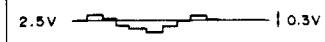
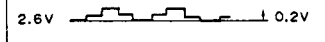
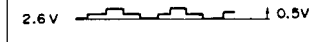
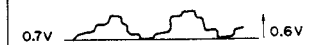
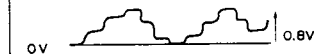
Reel capstan servo unit

Pin Name		Operation
CN12	①, ②, ⑥	DC 5 V
	③	Reference varies between 2 and 4 V according to the tape winding diameter. Around DC 26 V. During FF:  0 V during REW. DC 4.5 V during the guide movement.
	④, ⑫	GND
	⑤	Around DC 2.1 V. 0 V during guide movement.
	⑦	Reference varies between 2 and 5 V according to the tape winding diameter. Around DC 1.2 V. 0 V during FF. During REW:  DC 1.7 V during the guide movement.
	⑧	"L" when no tape is set during REW.
	⑨, ⑩	Square wave of 2 to 4 Hz. The frequency varies according to the tape winding diameter.
	⑪	"H" when no tape is set during REW.
CN13	①, ②, ⑥	 During Playback only.
	③, ⑭	GND
	④, ⑤	Around DC 1.3 V.
	⑦, ⑧	Around DC 3.4 V.
	⑨, ⑩	Around DC 5.4 V.
	⑪	DC 6 V
	⑫	Around DC 4.6 V.
	⑬, ⑮	DC 2.3 V + 100 mVp-p, triangular wave of around 560 Hz.
CN14	①	Generates an "H" pulse at the end of cassette shell loading or ejection.
	②	Around DC 0.6 V. Around DC 2.6 V during FF and REW.
	③	DC 5 V
	④, ⑥, ⑦	GND
	⑤	DC 6 V
	⑧, ⑨	DC 6.5 V
CN15	①	"L" after the start of tape loading until the start of ejection.
	②	"H" during FF and REW.
	③	"H" with ×9 speed in test mode.
	④	Generates an "H" pulse at the end of cassette shell loading or ejection.
	⑤	"H" when a 1.5 TP tape is set.
	⑥	"H" with ×3 speed in test mode.
	⑦	"L" during REW.
	⑧	"L" during reel rotation.
	⑨	"H" at switching between Playback, FF and REW.
	⑩, ⑬	Square wave of 2 to 4 Hz. The frequency varies according to the tape winding diameter.
	⑪	"H" during the guide movement.
	⑫	"L" when no tape is set during REW.
	⑭	"H" when no tape is set during REW.
	⑮	"L" after the start of cassette shell loading until the start of ejection.
	⑯, ⑱	GND
	⑰, ⑲	Square wave of about 560 Hz. "H" during FF and REW.
	㉖	DC 6.5 V

TERMINAL PIN FUNCTIONS

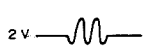
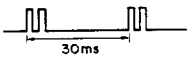
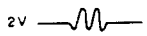
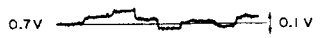
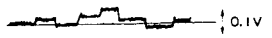
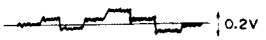
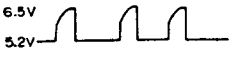
Pin name		Operation
CN15	㉑, ㉒	DC 2.5 V
	㉓	DC 6 V
	㉔	—
	㉕	2.5V ⊓⊓ 0.2V
	㉖	DC 5 V
IC8	①	DC 0.9 V. Sawtooth wave of 0.3 to 0.5 V during FF. 1V During REW: Reference varies between 0.8 and 1.8 V according to the tape winding diameter.
	②, ③	DC 0.6 V. 0 V during FF. During REW: 1V Reference varies between 0.8 and 2.4 V according to the tape winding diameter.
	⑤, ⑥	DC 1.4 V. During FF: 1V Reference varies between 1.0 and 2.0 V according to the tape winding diameter.
	⑦	Reference varies between 0.8 and 1.2 V according to the tape winding diameter. DC 1 V. During FF: 1V Sawtooth wave of 0 to 0.5 V during REW.
IC11	⑫	DC 1.4 V. 0 V during switching between Playback, FF and REW.
	⑬	DC 2.5 V
IC12	①, ④	DC 1.4 V
	⑮	0 V
IC13	⑩, ⑪	Square wave of 2 to 4 Hz. The frequency varies according on the tape winding diameter
	⑫	5V / 0V Cycle 4 to 6 Hz.
	⑬	3V / 0V Cycle 4 to 6 Hz.
	⑭	2.5V / 2V Cycle 4 to 6 Hz.
	⑮	4V / 0V Cycle 4 to 6 Hz.
IC20	②, ③	DC 1.4 V + 50 mVp-p, sine wave of about 560 Hz.
	④, ⑤	2.8V / 0V Around 560 Hz. DC 1.3 V during FF and REW.
	⑥	Square wave of around 560 Hz. DC 4 V during FF and REW.
	⑨	3V / 0V Around 560 Hz. DC 5 V during FF and REW.
	⑩	3V / 2.4V Around 560 Hz.

TERMINAL PIN FUNCTIONS

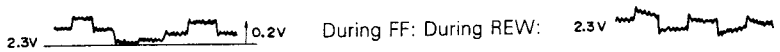
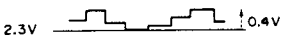
Pin name		Operation
IC20	⑪ ⑬	
	⑭	 DC 1.6 V during FF and REW.
	⑮	 DC 0.8 V during FF and REW.
IC21	①	 0 V during FF and REW.
IC23	⑤ , ⑥	0 V during FF and REW.
	⑦	DC 5.3 V during FF and REW.
Q17	C	 DC 0.8 V during FF and REW.

TERMINAL PIN FUNCTIONS

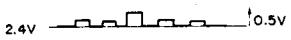
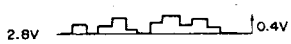
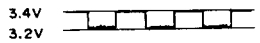
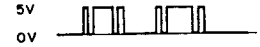
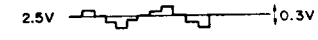
Drum mechanism microprocessor unit

Pin name		Operation
CN18	①	GND
	②, ③	0 V (signal is not seen).
	④	DC 1.7 V
	⑤ ~ ⑩	DC 2.5 V + 100 mVp-p. Sine wave with 7.5 ms period.
	⑪	DC 3 V
	⑫ ~ ⑭	DC 1.7 V + 1.5 Vp-p. Sine wave with 7.5 ms period.
IC1	①	
	②, ③	DC 2 V
	⑤, ⑥	DC 1.8 V
	⑦	DC 1.8 V + 0.8 Vp-p. Sine wave of 800 Hz.
IC2	①	
	②	DC 2.2 V
	③	
	⑤	DC 1.8 V + 0.8 Vp-p. Sine wave of 800 Hz.
	⑥	DC 1.8 V
	⑦	800 Hz square wave.
IC3	④	DC 3.2 V during cylinder rotation.
	⑤	DC 6 V. 0 V for reducing the cylinder rotation speed.
	⑥	DC 0.8 V when the cylinder is OFF. In other cases: 
	⑦	DC 0.5 V when the cylinder is OFF. In other cases: 
	⑧	DC 0.6 V when the cylinder is OFF. In other cases: 
	⑩	
	⑪	
	⑫	
	⑬	

TERMINAL PIN FUNCTIONS

Pin name		Operation
IC3	㉕	DC 3.2 V
IC4	① ~ ③	
IC5	①	DC 2 to 3 V + 100 mVp-p. Triangular wave with 120 μs period.
	⑦	DC 2.4 V + 80 mVp-p. Triangular wave with 0.45 ms period.
	⑧	
Q5	C (12k)	DC 0.6 V
	C (6.8k)	DC 2 V
Q6	C (6.8k)	DC 1 V
	C (4.7k)	DC 1.8 V

RAM ECC ATF unit

Pin name		Operation
IC10	①	DC −3.8 V
	②	0 V + 0.5 Vp-p. PLL waveform.
	③	DC −1 V
IC16	①, ②, ⑮	0 V + 0.5 Vp-p. PLL waveform.
	③, ④, ⑫	SWP INV
	⑤, ⑩	SWP
	⑬, ⑭	DC 2.5 V
IC18	⑧	
	⑬	
	㉗	
	㉘	
IC19	① ~ ③	
	⑧ ~ ⑩	DC 2.5 V
Q8	C (220k)	DC 0.5 V

TROUBLESHOOTING

This section gives the description on the symptoms and possible causes that may be of help in your servicing the KDT-99. The Mechanism Ass'y functions in a very complicated way that cannot be explained breifly. However, a fair idea concerning the cause of each trouble may be obtained by checking the following points.

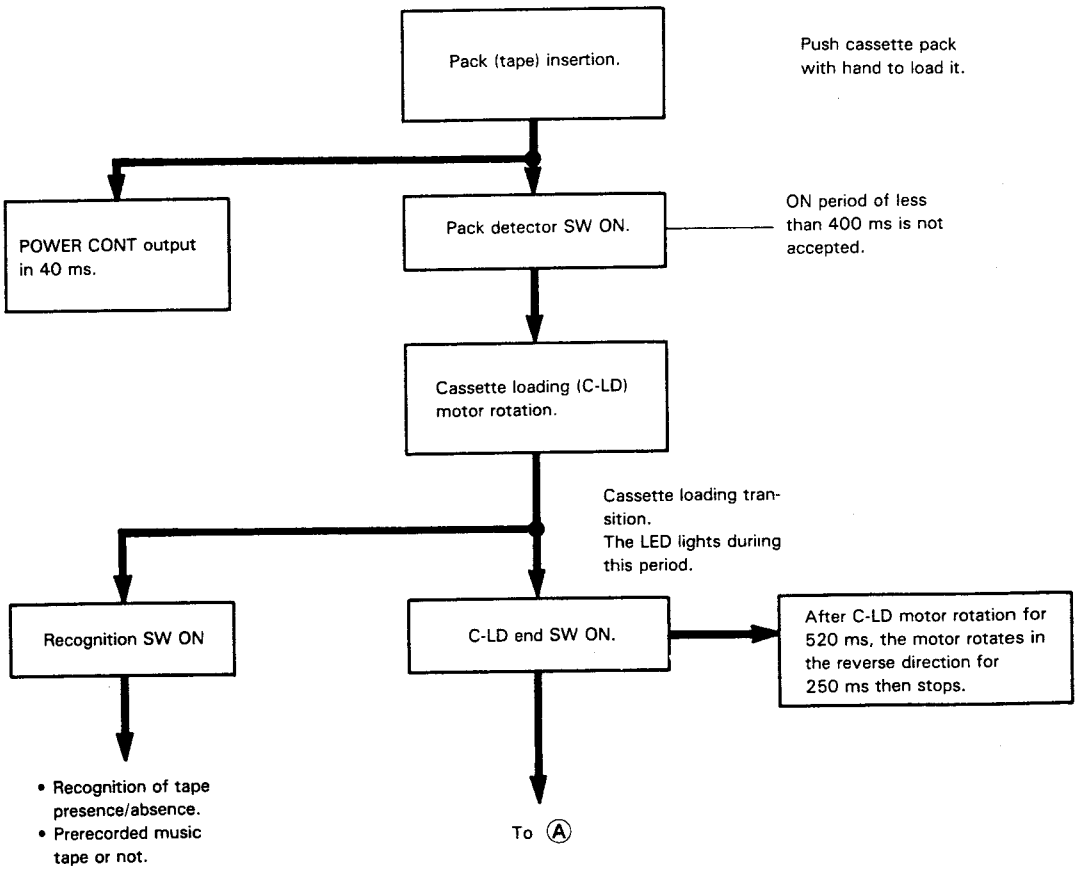
[1] A series of mechanism operations until the music signal is output.
[2] Possible defective points with specific operating statuses.
[3] Waveforms at different points in different operations.
[4] Judgment from waveforms.
[5] User's self-diagnostics before calling for service.
[6] Troubleshooting

When servicing the unit, be sure to refer to the wiring diagrams and adjustment specifications. The use of the following measuring instruments is also recommended.

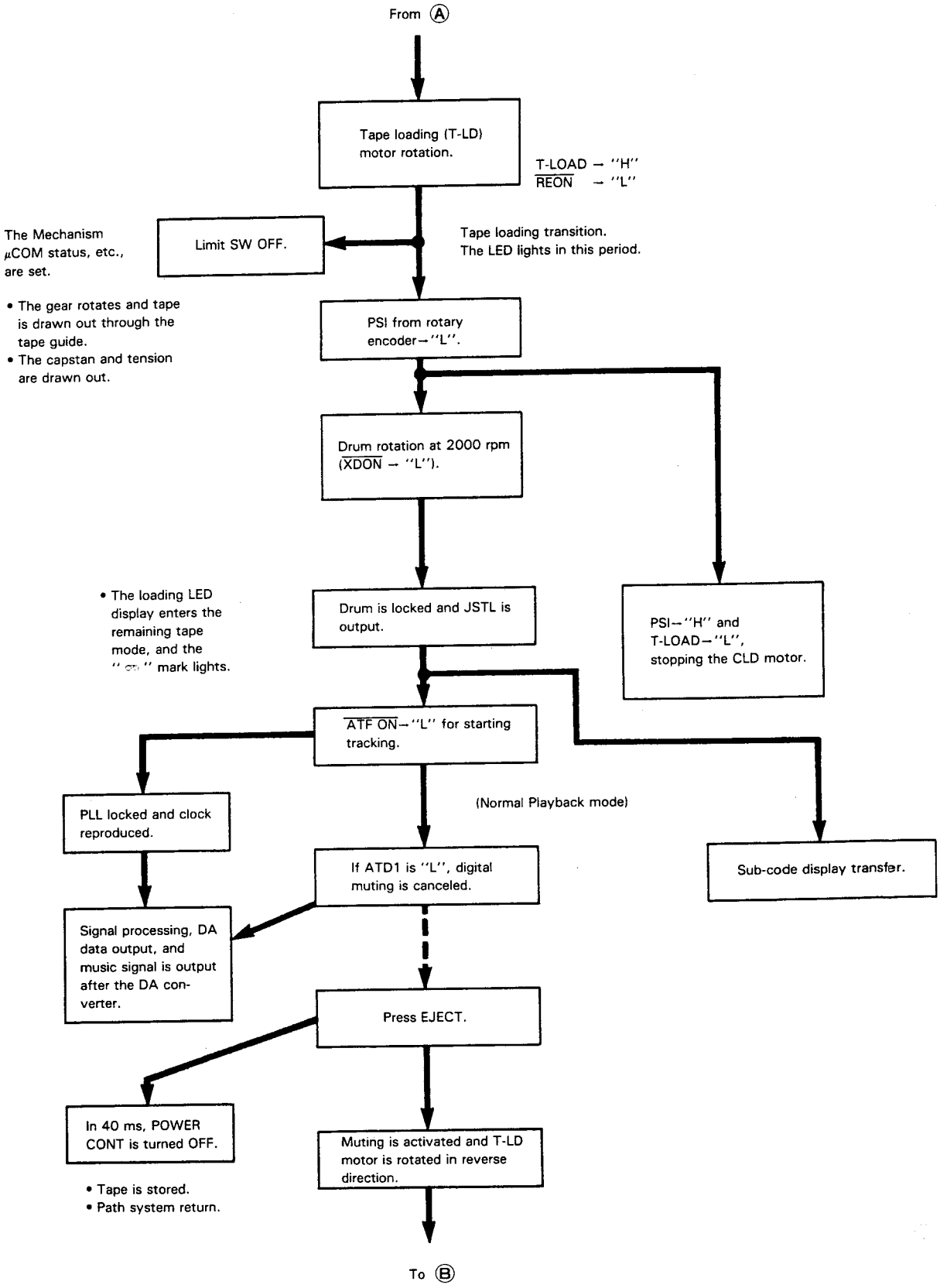
1. 4-trace oscilloscope (or a scope with external trigger input), for example the CS-2110 from KENWOOD.
2. Digital voltmeter/frequency counter, for example the DF-760 from KENWOOD.
3. Test Tape.

[1] Mechanism operations until the music signal is output.

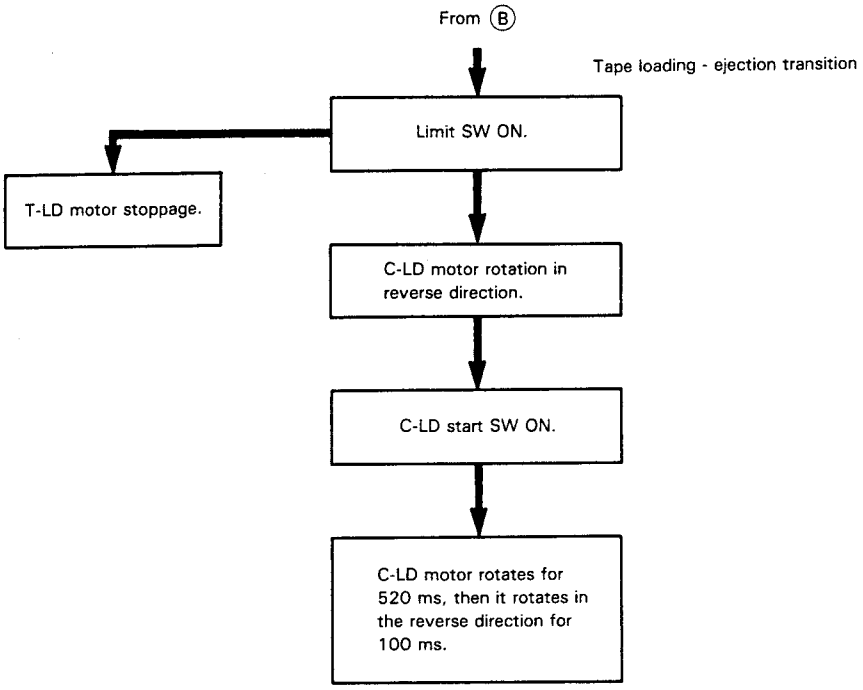
The KDT-99 uses the horizontal loading system, with which the loading starts when the cassette is inserted in the loading slot and pushed by hand. The flow of operations before the output of music signal is as follows.


Pack (tape) insertion.
Push cassette pack with hand to load it.
POWER CONT output in 40 ms.
Pack detector SW ON.
ON period of less than 400 ms is not accepted.
Cassette loading (C-LD) motor rotation.
Cassette loading transition.
The LED lights during this period.
Recognition SW ON
C-LD end SW ON.
After C-LD motor rotation for 520 ms, the motor rotates in the reverse direction for 250 ms then stops.
• Recognition of tape presence/absence.
• Prerecorded music tape or not.
To Ⓐ

TROUBLESHOOTING


From Ⓐ
Tape loading (T-LD) motor rotation.
T-LOAD → "H"
REON → "L"
The Mechanism μCOM status, etc., are set.
Limit SW OFF.
Tape loading transition. The LED lights in this period.
• The gear rotates and tape is drawn out through the tape guide.
• The capstan and tension are drawn out.
PSI from rotary encoder→"L".
Drum rotation at 2000 rpm (XDON → "L").
• The loading LED display enters the remaining tape mode, and the " " mark lights.
Drum is locked and JSTL is output.
PSI→"H" and T-LOAD→"L", stopping the CLD motor.
ATF ON→"L" for starting tracking.
(Normal Playback mode)
PLL locked and clock reproduced.
If ATD1 is "L", digital muting is canceled.
Sub-code display transfer.
Signal processing, DA data output, and music signal is output after the DA converter.
Press EJECT.
In 40 ms, POWER CONT is turned OFF.
Muting is activated and T-LD motor is rotated in reverse direction.
• Tape is stored.
• Path system return.
To Ⓑ

TROUBLESHOOTING


From Ⓑ
Tape loading - ejection transition
Limit SW ON.
T-LD motor stoppage.
C-LD motor rotation in reverse direction.
C-LD start SW ON.
C-LD motor rotates for 520 ms, then it rotates in the reverse direction for 100 ms.

[2] Possible defective points with specific operating statuses

- **Symptoms when cassette pack is inserted**

A. If the cassette pack is not accepted:

1. The Pack-In SW may be defective or connector is disconnected.
2. The C-LD motor or the port expander system controlling the C-LD motor may be defective.
3. The Mechanism μCOM may be stopped by ACC detection (by the System μCOM).
4. The dew sensor or temperature sensor is apparently ON (due to the sensor or connector defect).
5. If the touch tone continues to be produced when the power is turned ON, the resetting may be faulty.

B. If the cassette pack is accepted but ejected immediately:

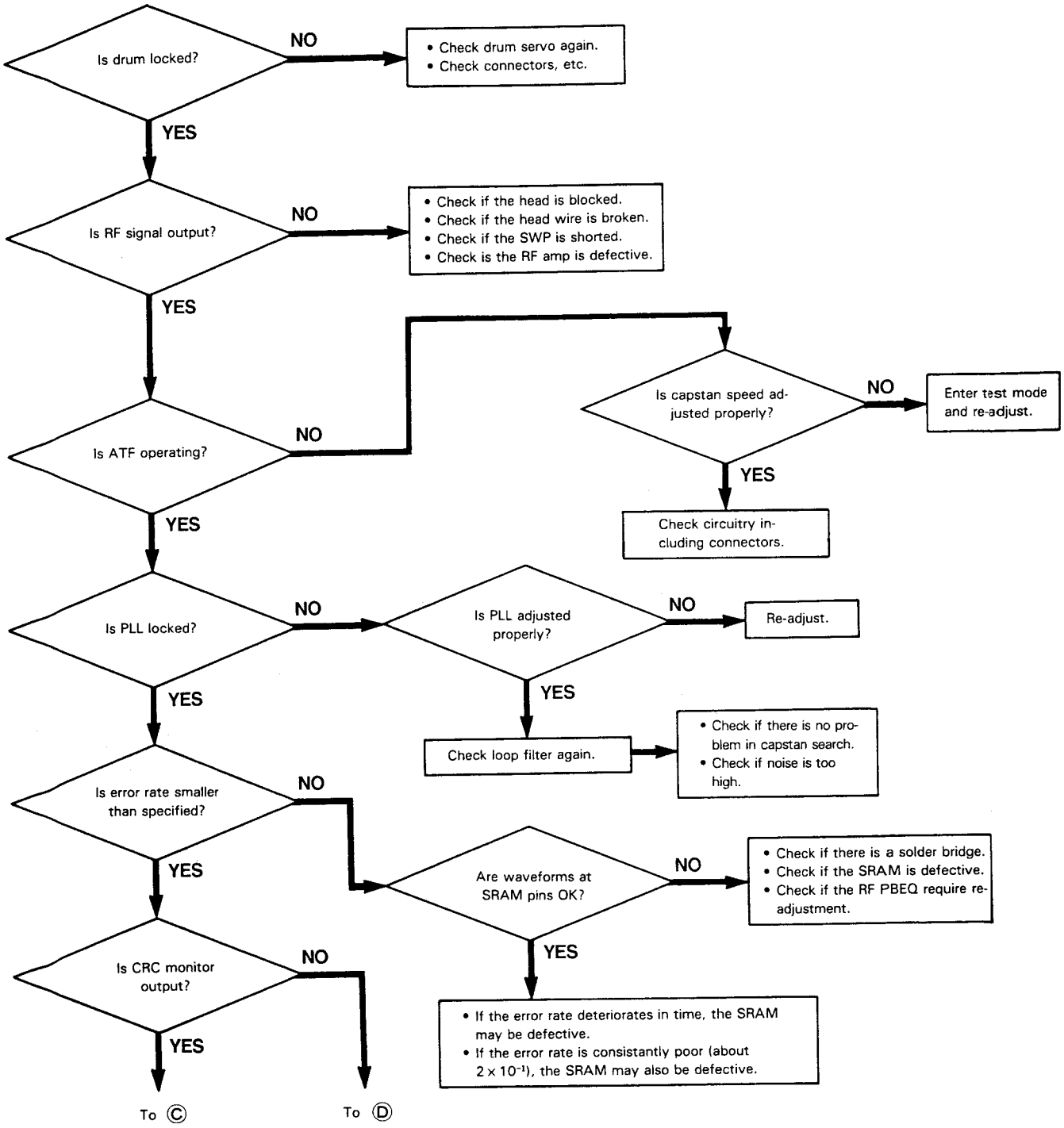
1. The Loading-End SW may be defective.
   - In this case, the motor keeps on rotating.
2. The Recognition SW may be defective.
   - As T-LD does not occur, cassette is ejected in 5 s.
3. Tape may be cut.
   - The cassette is ejected.
4. The Limit SW may be defective.
   - T-LD stops in the middle.
5. The rotary encoder may be defective.
   - T-LD is repeated a few times (cassette is ejected after 5 repetitions).
6. The end sensor is defective.

- **When the loading sign is kept indicated after the cassette insertion (this symptom occurs after the T-LD completion).**

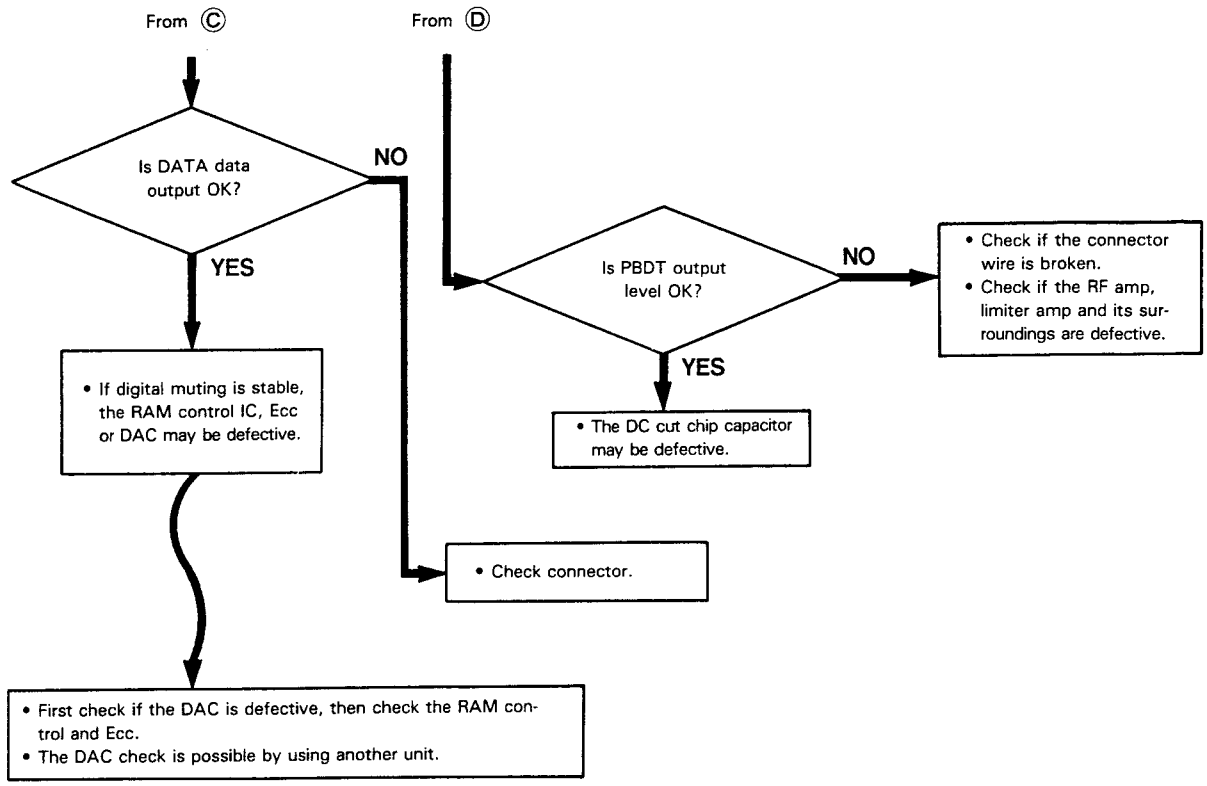
1. If the "ꝏ" mark is not displayed (JSTL "L"):
   - The drum servo may be unstable.
   - The drum rotation may be unstable due to too high or improper tape tension adjustment.
   - The drum may be unstable due to great tape oss torque.
   - The X'tal oscillation may be unstable due to trouble at the T/R terminal.
2. If the "ꝏ" mark is displayed:
   - The drum servo may be unstable, turning JTSL "H" momentarily.

TROUBLESHOOTING

- **The sound is not produced at all or produced only intermittently although the drum is locked.**


Is drum locked?
NO
• Check drum servo again.
• Check connectors, etc.
YES
Is RF signal output?
NO
• Check if the head is blocked.
• Check if the head wire is broken.
• Check if the SWP is shorted.
• Check is the RF amp is defective.
YES
Is ATF operating?
NO
YES
Is capstan speed adjusted properly?
NO
Enter test mode and re-adjust.
YES
Check circuitry including connectors.
Is PLL locked?
NO
Is PLL adjusted properly?
NO
Re-adjust.
YES
YES
Check loop filter again.
• Check if there is no problem in capstan search.
• Check if noise is too high.
Is error rate smaller than specified?
NO
YES
Are waveforms at SRAM pins OK?
NO
• Check if there is a solder bridge.
• Check if the SRAM is defective.
• Check if the RF PBEQ require readjustment.
YES
Is CRC monitor output?
NO
YES
• If the error rate deteriorates in time, the SRAM may be defective.
• If the error rate is consistantly poor (about 2 x 10⁻¹), the SRAM may also be defective.
To Ⓒ
To Ⓓ

TROUBLESHOOTING


From Ⓒ
From Ⓓ
Is DATA data output OK?
NO
YES
Is PBDT output level OK?
NO
YES
• Check if the connector wire is broken.
• Check if the RF amp, limiter amp and its surroundings are defective.
• If digital muting is stable, the RAM control IC, Ecc or DAC may be defective.
• The DC cut chip capacitor may be defective.
• Check connector.
• First check if the DAC is defective, then check the RAM control and Ecc.
• The DAC check is possible by using another unit.

- **Symptoms occurring during playback and their possible causes**
  1. **Head eye is blocked.**
     - The time code may start running suddenly.
     - If only one head is blocked, the sound may deteriorate.
  2. **Cassette is ejected during switching from Playback to FF or REW.**
     - The rotary encoder may be malfunctioning.
     - The T-LD motor may be defective.
     - The reel may be stopped due to the increase of the reel loss torque.
  3. **FF or REW cannot be switched to Playback.**
     - JSTL may be defective.
     - The ATF may be defective.
     - The tape may be rejected (due to defect of reel DIR signal).
  4. **Search is not possible.**
     - The communication line may be malfunctioning due to command error.
     - The PLL may be unstable (increasing RF noise).
  5. **A part of RF is absent.**
     - T-LD may be erroneous.
     - Tape path may be defective.
  6. **Tape stops immediately after blank skipping has started.**
     - RF noise may be high.
     - The ATF detection threshold may be improper.

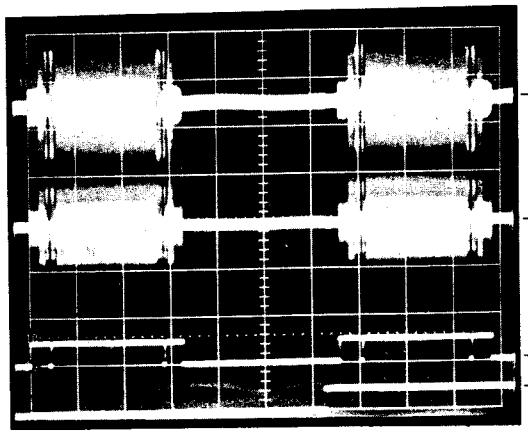
- **Symptoms occurring with the whole of the set**
  1. **Electronic volume UP/DOWN control keeps on varying in one direction.**
     - The SW on the Panel Ass'y may be kept ON.
  2. **The same sound is produced continuously.**
     - The electronic VR data may be absent.
  3. **The DC/DC converter does not work.**
     - The ACC detection is erroneous.
     - The power supply capacity is insufficient.
  4. **Power cannot be turned ON/OFF completely.**
     - The segment voltage may be insufficient (due to the driver's backward transistor effect).
  5. **The tuner does not work.**
     - The buffer may be defective (if the electronic VR works).
     - The T/R switching may be defective.
  6. **Beat is heard during tuner reception.**
     - The DC/DC converter may be defective.
     - The T/R switching may be defective.

TROUBLESHOOTING

[3] Waveforms at different points in different operations

Waveforms at different points

[Normal Playback]



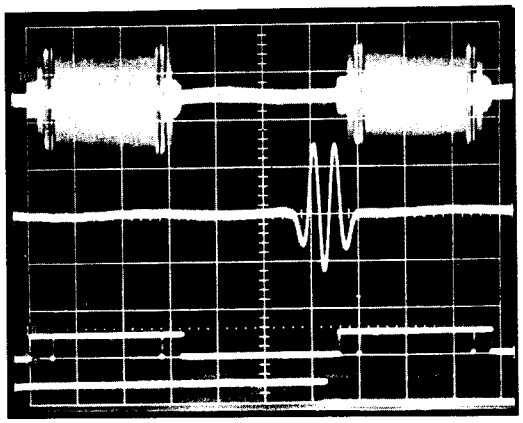
→ RF waveform (100 mV/div), TP6

→ PLL error voltage waveform (500 mV/div), TP5

→ RF SF (RF envelope detector output) waveform, TP11

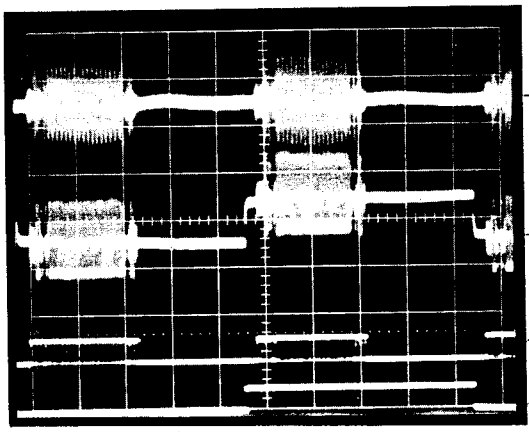
→ SWP waveform (L is A CH head), TP3

[Normal Playback]



→ Drum PG waveform (500 mV/div), TP1

[Search (FF)]



→ RF waveform

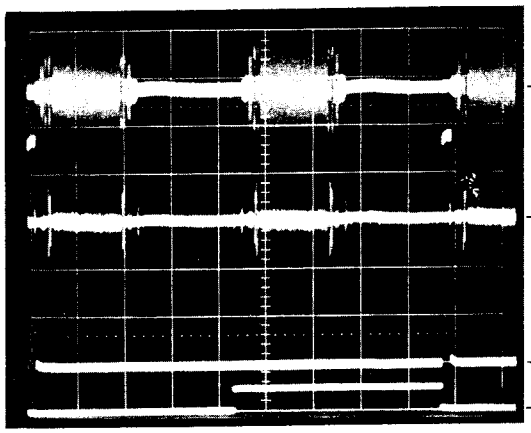
→ PLL error voltage waveform

→ RF SF

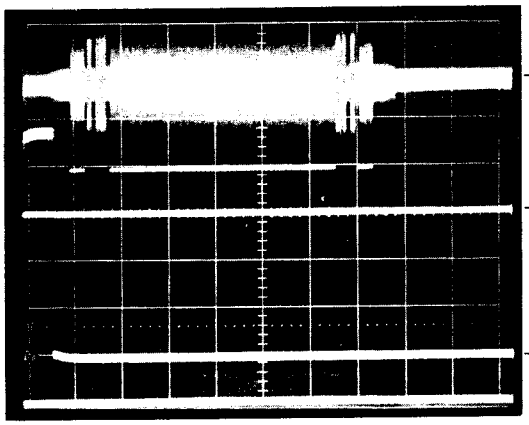
→ SWP

TROUBLESHOOTING

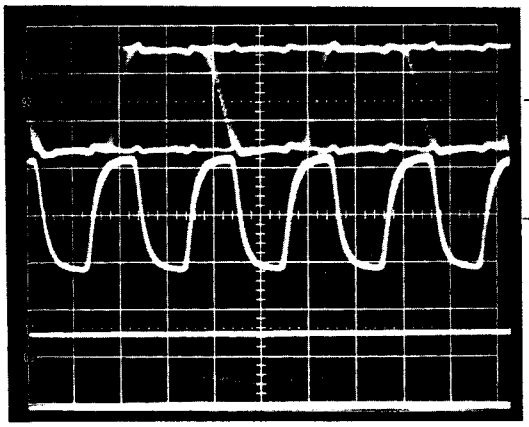
[Normal Playback]



[Normal Playback]

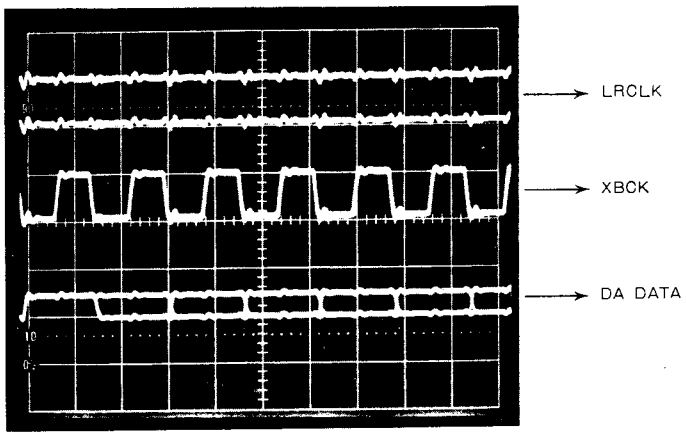


[Normal Playback]



TROUBLESHOOTING

[Normal Playback]



[4] Judgment from waveforms

Defective points in the servo circuitry and mechanism can also be judged from waveforms.

1. **The RF waveform amplitude moves up and down:**
   - This occurs when the ATF repeats ON and OFF, and the capstan speed servo or drum servo may be defective. It could also be due to error in servo reference (division of X'tal).
2. **The time axis of RF waveform is unstable.**
   - The drum servo or drum reference signal may be erroneous.
3. **The ending portion of the PLL error voltage waveform is unstable.**
   - This occurs when the tape tension is too light.
4. **The PLL error voltage is out of the adjustment point.**
   - The −5 V signal may not be output, or the RF signal has poor CN ratio.
5. **The PLL error voltage jumps up and down.**
   - This occurs when the tape contact is poor or when the malfunction prevention circuit is defective. The jump could also occur when the tape vibrates during search due to erroneous tape path adjustment.
6. **The RF waveform is of a mountain-like shape.**
   - The head may be playing across several tracks. This occurs when the path adjustment or track pitch is erroneous.

TROUBLESHOOTING

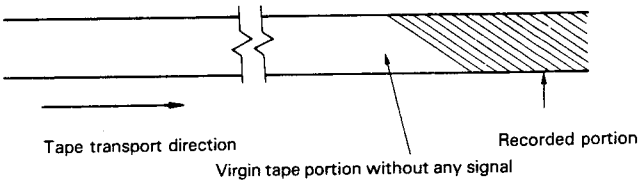
[5] User's self-diagnostics before calling for service

	Symptom	Possible causes	Treatment
Operation	Cassette cannot be inserted.	1) The cassette may be inserted in a wrong direction. 2) The cassette is not accepted for 2 sec. after turning ACC ON. 3) The humidity or temperature sensor may be operating.	1) Insert it in the correct direction. 2) Wait until the relay functions. 3) Wait until the ambient humidity or temperature drops.
	The cassette is ejected immediately after it is inserted.	1) The tape may be cut. 2) The tape may have slack.	1) Use a cassette with uncut tape. 2) Take up the slack.
	Auto-ejection does not occur after rewinding.	The cassette is not ejected at the beginning of tape if Repeat All has been activated.	Cancel Repeat All.
	FF, REW, and UP/DOWN search cannot be activated during Playback.	Repeat One has been activated.	Cancel Repeat One.
	Search takes longer time than usual.	1) The tape may include non-signal blanks. 2) PNOs may not be recorded continuously. 3) The S-ID positions may be made incorrect by a later recording.	1) Record programs to eliminate non-signal blanks. 2) Record programs and sub-codes to make the PNOs consistent. 3) Take care in after-recording.
	PNO search cannot be activated.	PNOs have not been recorded.	The switch has been designed to become inoperative when no PNO is detected.
	Skip cannot be activated.	Skip IDs are not read.	The set has been designed not to read the skip IDs.
	Cassette is ejected suddenly in the middle of Playback.	1) The humidity sensor may be operating. 2) The temperature sensor may be operating. 3) Due to tape defect. The tape may be wound irregularly or in a way that results in increased loss torque.	1) Decrease the ambient humidity (by turning the air conditioner on, etc.). 2) Decrease the ambient temperature. 3) Replace the cassette, or rewind the tape after playing it till the end.
	Tape is ejected suddenly in the middle of FF/REW.	The tape may be wound irregularly.	Replace the cassette, or rewind the tape after playing it till the end.
	Search cannot be activated.	The length of a program may be shorter than 20 sec., or the S-ID recording time may be too short.	Record programs so that they are of sufficient length.
Playback	Crackling noise is heard.	1) The tape may contain serious damage. 2) The head eye may be blocked (in which case the Running display appears).	1) Be careful to protect the tape surface. 2) Clean the heads using a cleaning tape.
	Sound is distorted.	1) This may occur when the sampling frequency is 32 kHz. 2) The recording level might be too high. 3) A large disturbance signal may be interfering with the set.	1) Reduce the high-frequency response with TONE control. 2) Record signals to avoid digital over-level. 3) Eliminate the source of disturbance.
	Sound is not produced.	1) No sound may be recorded on tape. 2) The tape may be recorded in long-hour mode. 3) The cables may be connected improperly. 4) The electronic volume control may be set to $-\infty$.	1) Use a tape with signals recorded on it. 2) The set cannot play a long-hour tape. The display shows "E" in this case. 3) Connect as indicated in the instruction manual. 4) Press the switch.
	Sound is heard but no display appears.	As DAT recorders from different manufacturers use different sub-code recording formats, this set cannot display information recorded with certain DAT recorders.	Please base judgment on the sub-code recording formats shown in the separate table.

TROUBLESHOOTING

	Symptom	Possible causes	Treatment
Playback	Sound is heard, but search cannot be activated.	1) S-IDs may not have been recorded. 2) The S-ID may be recorded only in a short portion across a non-signal blank and the rise of recorded section.	1) Use a tape containing S-IDs. 2) Record programs continuously to eliminate non-signal blanks.

(Note) "Non-signal blank" mentioned in the description refers to the following.



* When record muting is activated during recording, the sub-code signal is recorded in this portion. However, the non-signal blank does not contain any signal.

TROUBLESHOOTING

Symptom	Possible causes	Treatment
① Power cannot be turned ON (1).	When digital transistor Q13 (DTA124EK) controlling the external power supply (DC/DC converter) is defective, the power cannot be turned on smoothly, and operation cannot be started due to improper communication between the Mechanism μCOM and System μCOM.	Replace Q13.
② Power cannot be turned ON (2).	The fuse may be blown. (The ACC 1 A fuse and ACC 1 A fuse of the BACK UP 3 A fuses blow most often.)	Replace the blown fuse.
③ Power is turned OFF automatically in 2 to 3 minutes after it is turned ON.	The power cord from the DC/DC converter to the main body, possibly caught by a pin of PC board inside the set, could be short-circuited.	To prevent short-circuiting, add fiber insulation to the PC board surface where it comes in contact with the DC/DC converter cord.
④ Tape is transported like in FF mode when the cassette isinserted (particularly when the tape is half wound). The normal status sometimes resumes, or the status becomes normal after FF or Index Scan is performed.	There may be an adjustment error in PLL or Vref.	Re-adjust (PLL, Vref, etc.).
⑤ REW search cannot be activated.	The cylinder may not be fixed securely on the cylinder base.	Fix the cylinder base.
⑥ Music Search cannot be activated. Only a boom, or humming sound is heard, and the situation cannot be cleared by pressing the RESET key. However, the tape transport and panel display are normal.	The choke coil (L5) inside the DC/DC converter may be broken(−13 V line).	Replace the choke coil.
⑦ "E" is displayed and sound is not heard.	1. The B CH RF wave may not be output (due to RF amp IC defect). 2. "E" is displayed when one of the RF outputs is not output (due to RF amp defect or play head blockade).	Replace IC1 (CXA1045) on the X13-5690-00 (A/3).
⑧ The tape may be entangled around the slant pole.	Tape entanglement occurs when a back-up rush current of approx. 8 A flows at the start of DAT operation and drops momentarily to below 5 V. This results in repeated resetting, causing tape entanglement depending on the timing.	Treat the back-up wiring (direct wiring to the battery is recommended).

TROUBLESHOOTING

Sub-code Recording Formats of Different Manufacturers

Maker	Model	A-TIME	P-TIME	KDT-99 display & operation
Sony (Aiwa)	DTC-1000ES (XD-001)	Not recorded.	Recorded for 9 sec. after the program start.	A-TIME: Running display. P-TIME: Displayed in normal playback from the program start. Running display in other cases.
Sharp	RX-X100	Recorded. PNO: Recorded all over.	Recorded all over the program. PNO: Recorded all over.	A-TIME: Displayed. P-TIME: Displayed. However, with after-recorded tape, correct time is displayed only in normal playback from the program start.
Matsushita (Technics)	SV-D1000	Same as above.	Same as above.	A-TIME: Displayed. P-TIME: Displayed.
JVC (Toshiba)	XD-Z1100	Recorded. PNO: Recorded for 9 sec. after the program start.	Not recorded.	A-TIME: Displayed. P-TIME: Displayed only in normal playback from the program start. Running display in other cases.
Mitsubishi		Same as above.	Recorded all over the program. PNO: Recorded for 9 sec. from the program start.	A-TIME: Displayed. P-TIME: Displayed.
Hitachi (Lo-D)	DAT-9000			
KENWOOD	DX-2200SR KDT-99	Recorded. PNO: Recorded all over if PNOs are recorded at the same time as recording.	Recorded all over if PNOs are recorded at the same time as recording. In case of after-recording, recorded for 18 sec. from the program start. PNO: Recorded all over, on the time codes.	A-TIME: Displayed. P-TIME: Displayed. However, with after-recorded tape,correct time is displayed only in normal playback from the program start.

Maker	PNO display of KDT-99
Sony (Aiwa), JVC, Mitsubishi	The PNO is displayed if the tape position at the tape loading is within 9 sec. from the start of a program. In other cases, the volume (dB) is displayed until passing the first program start position after tape loading, at which time the PNO starts to be displayed.
Sharp, Matsushita, KENWOOD	The PNO is displayed immediately after tape loading. However, the KENWOOD mode requires that the PNOs have been recorded previously.
Remark	• The PNO/MS search can be performed regardless of the manufacturer. • When the PNOs are inconsistent, the PNO search could take more time than usual. • When PNOs are unknown, the setting to PNO search is inhibited. • When the tape contains non-signal blanks, FF or REW search could take more time than usual. • With a tape recorded at half speed (possible with JVC and Toshiba models), "E" is displayed and muted. However, other operations can be conducted as usual.

TROUBLESHOOTING

Car R-DAT mechanism ass'y (DX-7) Troubleshooting

Precautions in handling

Take care of the following when handling the mechanism and component parts.

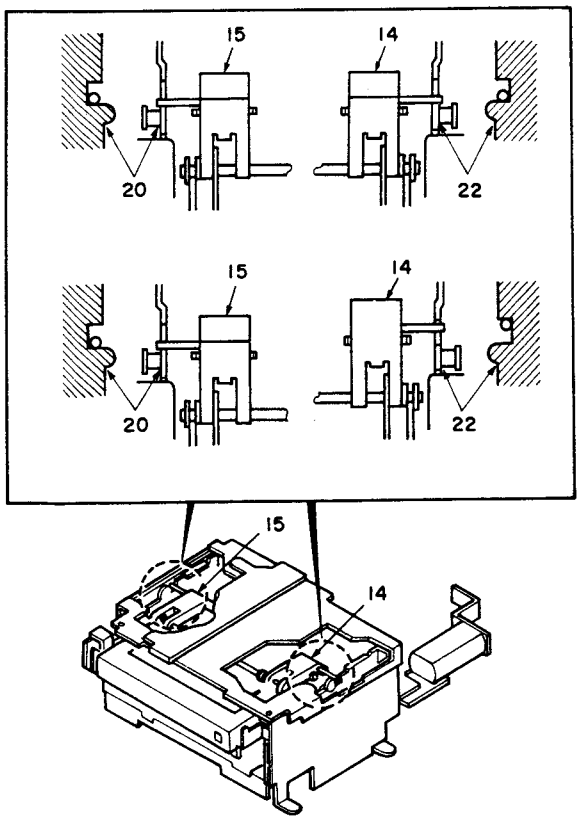
1. Do not place any heavy object on the mechanism chassis.
2. Do not touch the Drum Ass'y with dirty hand or gloves.
3. Never touch the drum heads.
4. Do not wipe the capstan shaft with alcohol, DIAPHRON or other fluid. Just wipe with a dry cotton swab.
5. Do not touch the guide rollers and slant pole with dirty hands or gloves.
6. Do not use the cloth used for wiping the pinch roller for wiping other parts.
7. Retain the springs in their initial conditions, and do not attempt to extend or cut them.
8. Be careful so that oil or grease does not adhere to the belts or pulleys.
9. Never bring a magnetized object near or in contact with a recorded cassette tape.
10. Do not use a magnetized tool when adjusting the tape transport system.

[Defects in Cassette Loading]

The cassette is not loaded when it is inserted.

[Possible causes]

1. **The cassette eject pin is caught by the loading plate spring.**
2. **The left and right cassette lock arm pin positions are not aligned correctly.**



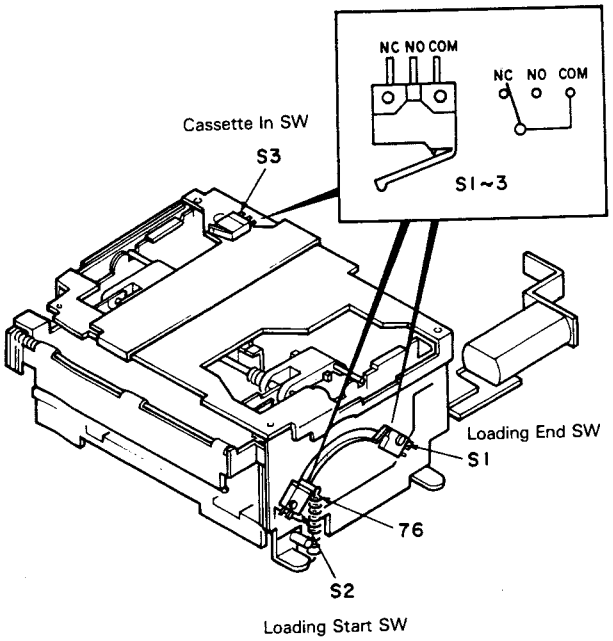
[Check methods]

① Remove the countersunk screw 4-M2.0 on the cassette loading plate (top panel), and take out the eject pin from the spring. Then secure the top panel using the countersunk screw 4-M2.0. **(Securing torque: 2.5 kg-cm.)**

② Check that the pins of the lock arms (14, 15) are both inserted properly in the front of the grooves of the Slider Ass'ies (20, 22). If not, remove the pan-head screws 5-M2.6, remove the timing shaft (55) by opening the gear chassis (4, 5) alittle, set the timing shaft (55) again while pushing the lock arm pins toward the front, and secure the pan-head screws 5-M2.6. **(Securing torque: 4 kg-cm.)**

TROUBLESHOOTING

3. The cassette in and loading microswitch operations are defective.



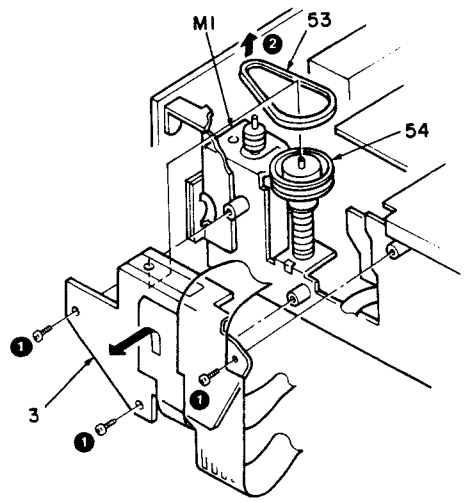
③ Remove the pan-head screws 4-M2.6 from the Cassette In microswitch (S3) and cassette loading plate (top panel), open the top panel, and use a tester to check for broken wires, poor contact (poor soldering) and damage. If there is any defect (if switching is impossible even when the lever is pressed), replace it.
(Securing torque: 1 kg-cm, soldering iron: 20 W).
Also check the cassette loading microswitches (S1, S2) for wire breakage, poor contact (poor soldering) and damage. In case of defect (if the switch cannot be switched by pressing the lever), replace it.
S1 and S2 can be removed from the outer side.
(Securing torque: 1 kg-cm, soldering iron: 20 W).

	(S3) Cassette In SW	(S2) Loading Start SW	(S1) Loading End SW
No. Cassette	NO, COM, GND, NC, High, 5V	Low	High
Cassette In	Low	High	High
Cassette Being Loaded	High	High	High
Cassette End	High	High	Low

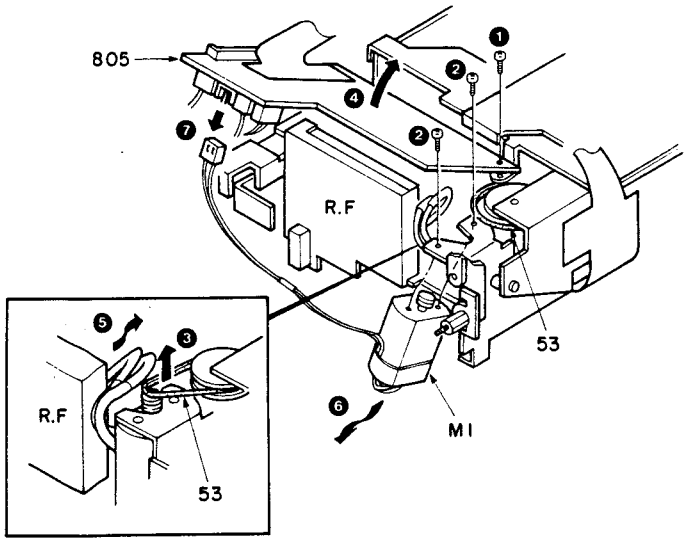
When there is no abnormality as shown above, check the PC board (Mechanism Sensor Unit, pin 8).

TROUBLESHOOTING

4. The operation of the cassette loading motor is defective.



Belt Replacement



Loading Motor Replacement

[Phenomena]

- Insufficiency in applied voltage:
  Longer loading time than usual (more than 2.5 sec.).

④ Check if the applied voltage is insufficient.
Rise voltage: 6 V DC.

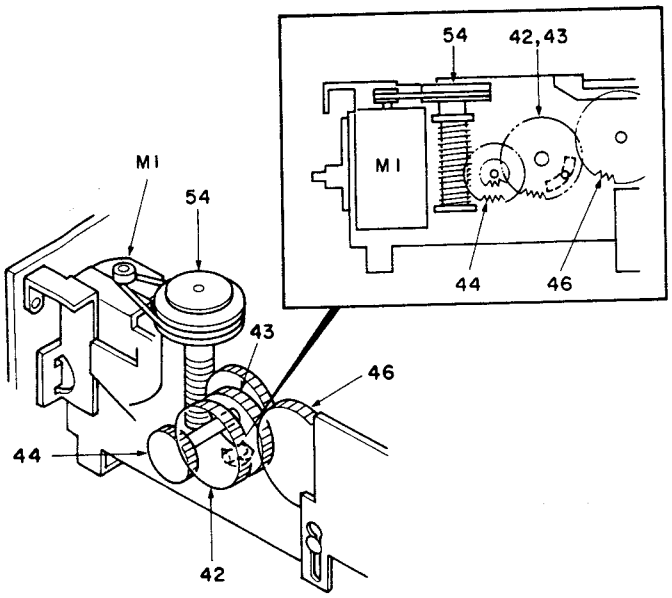
- Belt disengagement
  Re-engage the belt.
- Belt slippage
  There may be grease or oil on the belt.
  Clean with DIAPHRON, and replace if it cannot be removed.
  Remove the small binding screw 3-M2 then the Gear Ass'y, replace the belt, and attach the Gear Ass'y again.
  Securing torque: 3 kg-cm.
- Belt size defect:
  Replace the belt with the procedure above.
- Belt replacement
- Cassette loading motor belt replacement procedure
  1. Remove the 3 screws (❶) fixing the Chassis Caulking Ass'y (3).
  2. Replace the belt (❷).
- Motor pulley slip: Replace it.
  Remove the belt, remove the screws 2-M1.7 in the order from ❷ → ❶ . When attaching the screws, secure them in the order ❶ → ❷ .
  Securing torque: 2.0 kg-cm.
- Improper connection of connector: Re-connect it.
- Disconnection in connector lead wires (crimped points).
- Motor has seized.
  Check if grease is present in the worm section. If not, apply grease.
  Grease: Kanto Kasei Kogyo KK., White G311S
- Cassette loading motor replacement procedure
  When replacing the loading motor, first follow the disassembly procedure steps 1 to 10.
  1. Remove the screw (❶) fixing the X13-(C/3).
  2. Remove the 2 screws (❷) fixing the loading motor.
  3. Remove the belt (❸).
  4. Stand the X13-(C/3) in the direction of the arrow (❹).
  5. A cord is inserted between the RF unit and motor (M1). Take out the cord in the direction of the arrow (❺).
  6. Remove the motor (M1) in the direction of the arrow (❻).
  7. Remove the connector from the X13-(C/3) (❼).

TROUBLESHOOTING

5. The cassette container does not operate even when a cassette is inserted in it and pressed.

• The play of the cassette loading gear may be too small.

⑤ Remove the helical gear (44) and assemble again.



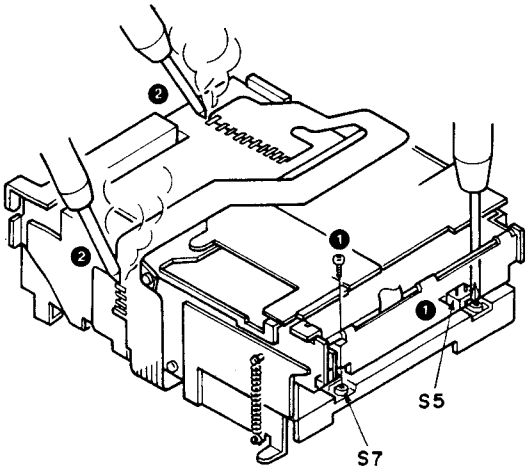
TROUBLESHOOTING

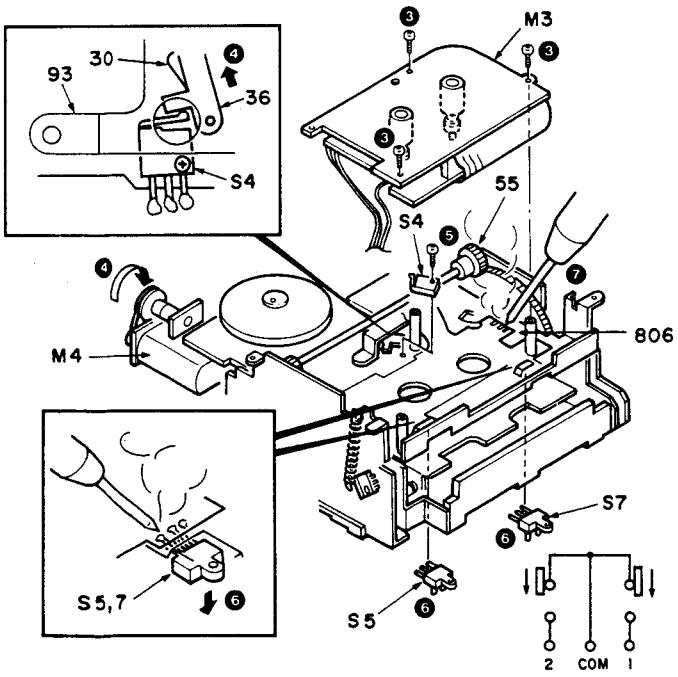
[Defects in tape loading]

Tape loading does not occur after cassette loading.

[Possible causes]

1. The operations of the Recognition SW (S5, S7) or Unloading SW (S4) is defective.





[Phenomena]

- Tape loading is not performed in case of wire disconnection or breakage.
- In case of short-circuiting, cassette is ejected in approx. 5 sec.

[Check method]

① Check for defects in contacts, soldering with flexible cable and breakage in flexible cable by pressing the push pin using a tester.

- Replacement procedure for Recognition SW (S5, S7) and flexible cable:
  1. Remove the screw (❶) fixing S5 and S7.
  2. Remove the flexible cable attached to the X13-(C/3) (❷).
  3. Remove the 3 screws (❸) fixing the reel motor (M3).
  4. Turn the motor (M4) with your finger in the direction of the arrow (❹), and move the Lever Ass'y (plate) (36) in the direction of the arrow.
  5. Remove the screw (❺) fixing S4.
  6. Remove the soldering from S5 and S7, and replace the switches (❻).
  7. Remove the flexible cable attached to the X13 through the lower side of the Shaft Ass'y (55) (❼).

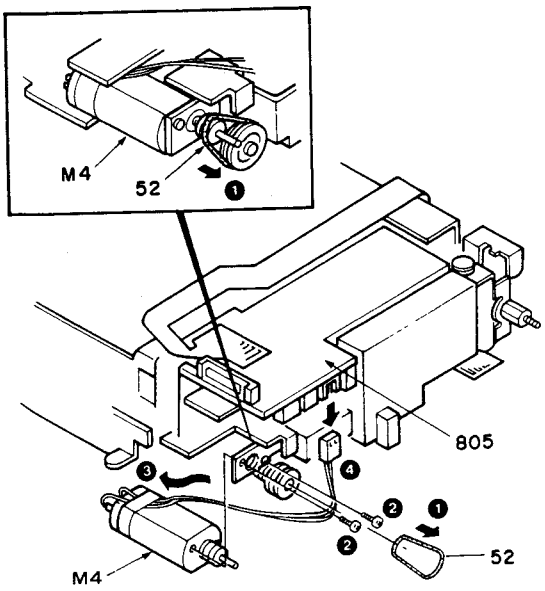
Caution: When attaching or removing solder to or from the Unloading microswitch terminals, make sure that the lever is separated from the switch lever.

Drive only the tape loading motor.

Soldering iron: 20 W

TROUBLESHOOTING

2. Tape loading motor operation is defective.



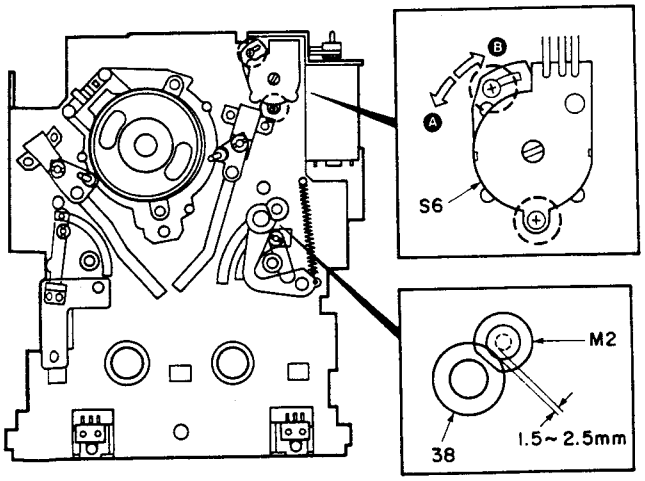
[Phenomenon]

- Tape loading does not occur.

② Check if the applied voltage is insufficient.
Rise voltage: 6 V DC.

- Belt disengagement
  Re-engage the belt.
- Belt slip
  The belt may have grease or oil on it.
  Clean with DIAPHRON, and replace if it cannot be removed.
- Motor pulley slip
  Remove the belt, remove the screws 2-M2.0 in the order from ❷ → ❶. When attaching the screws, secure them in the order ❶ → ❷
  Securing torque: 2.0 kg-cm.
- Motor fails to turn.
  Check if grease is present in the worm section. If not, apply grease.
  Grease: Kanto Kasei Kogyo KK., White G311S
- Improper connection of connector
  Re-connect it.
- Disconnection in connector lead wires (crimped points).
- Motor removal and attaching procedure
- Tape loading motor (M4) replacement procedure
  1. Remove the belt from the pulley of the Motor Ass'y (M4)(❶).
  2. Remove the 2 screws (❷) fixing the Motor Ass'y (M4).
  3. Remove the Motor Ass'y (M4) in the direction of the arrow (❸).
  4. Disconnect the connector (❹) from the X13-(C/3).

3. The rotary encoder adjustment is defective.



③ Check for wire disconnection, poor contact and position alignment error.

[Phenomena]

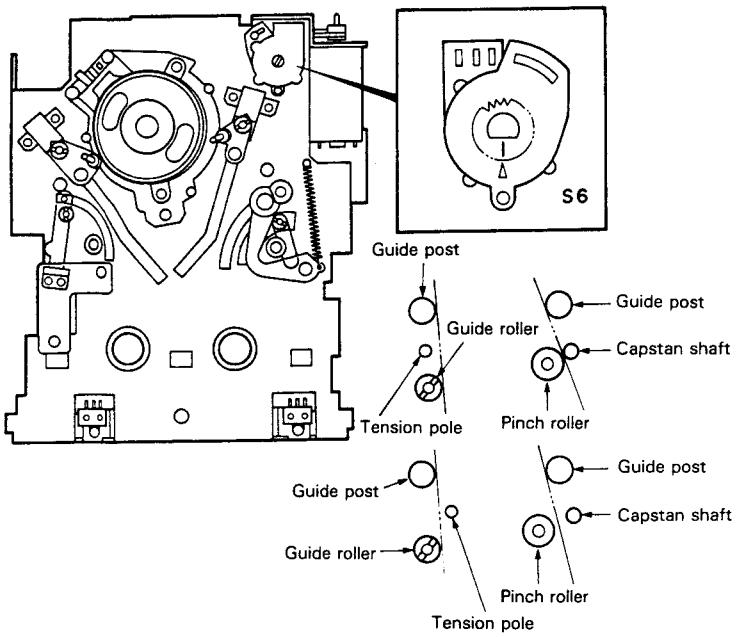
Loading ⟷ unloading are repeated 4 times.

Poor contact:
The connector may not be inserted securely. Re-insert it securely.

Wire disconnection:
The connector terminals may be crimped improperly. Replace the connector in this case.
Remove the screw 2-M2 and take it out.
Refer to the description of positioning in the installation procedure.

- Rotary encoder adjustment
  Check that the clearance between the capstan shaft and pinch roller is 1.5 to 2.5 mm in the stop mode.
  When decreasing clearance, turn toward Ⓐ
  When decreasing clearance, turn toward Ⓑ

TROUBLESHOOTING



Position alignment error

When the ST slant base is in the unloading position, the position of the aligning marking on the back side of the rotary encoder may be erroneous.

Rotary encoder position aligning and attaching method

- Align the aligning marking on the back side of the rotary encoder.
- Attach it to the mechanism chassis

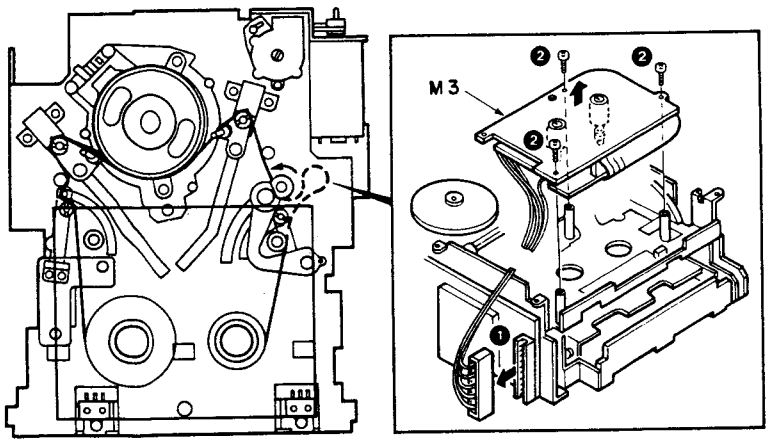
Caution: Attach so that the rotary encoder gear is stopped and does not move.
Use the attaching hole as the reference hole.

- Tighten the reference hole lightly (approx. 1 kg-cm) and perform the movement shown in the illustration on the left. If it is normal, secure the screw of (❶) (2 kg-cm) then screw (❷). At this time, hold the encoder to prevent its movement.

If the alignment is incorrect, the encoder gear has moved. In this case, take out the encoder, align the marking and attach in the same method.

4. Reel motor operation is defective.

- In this case, tape is loaded but not wound (not played).



Unloading ⟷ loading
is repeated 2 times, and cassette is ejected in 3 sec.
The tape slack cannot be corrected then, and cassette is ejected with slack tape.

Unloading ⟷ loading
is repeated 2 times, and cassette is ejected in 3 seconds.
The tape is wound by either of the reel motors so tape is not slack when the cassette is ejected.

④ Check for improper connection (poor contact) of connector.

Neither the takeup and supply reel motors do not rotate (FG is not detected).

The loading motor draws tape out and capstan motor transports tape. Meanwhile, the reel motors do not rotate and, as a result, tape slack is too much.

- Check if voltage is applied to the terminals.
- Either the takeup reel or supply reel lead wires may be disconnected.

Check if voltage is applied to the terminals.
Avoid the following checks as much as possible; only perform them as a last resort.

- Check if foreign objects have penetrated between the reel motor coil and magnet. → Remove the foreign object.
- Check if the reel motor coil is in contact with the magnet. → Replace the reel motor.
- Reel motor replacement procedure

1. Disconnect the connector (❶) from the X29-(C/3).
2. Remove the 3 screws (❷) fixing the reel motor (M3).

Check foreign objects and contact between the magnet and coil.

Turn the reel claw with your finger and ensureth at the reel rotates smoothly.

Securing torque: 2 kg-cm.

Caution: Be careful not to damage the coil when removing foreign objects.

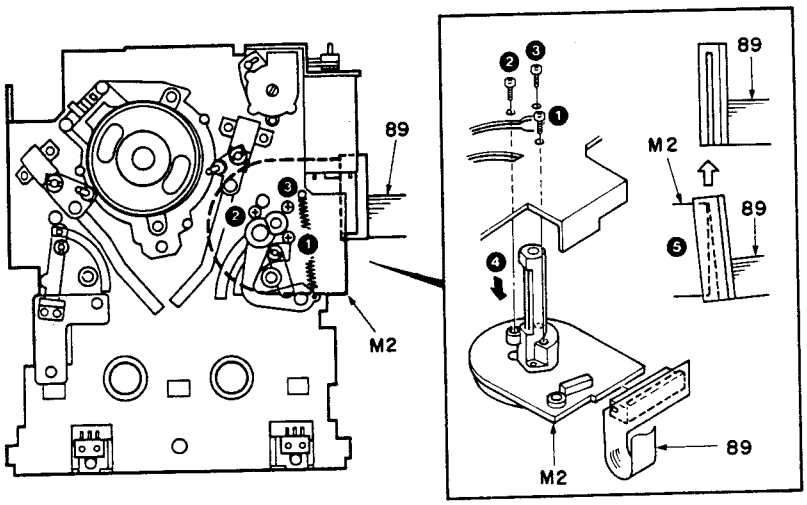
TROUBLESHOOTING

5. The capstan motor operation is defective.

In this case, tape is loaded but not wound (not played).
The capstan motor does not rotate.
The FG is not detected.
The cassette is ejected in 3 seconds.
(If the capstan motor does not rotate, the reel motors do not enter the play mode.)

⑤ Check for improper connection (contact) of the connector.
Connect it properly.
Check if voltage is applied to the terminals.

- Capstan motor replacement procedure
  1. Remove the screws fixing the capstan motor (M2), in the order from ❶ → ❷ → ❸.
     When attaching the screws, reverse the order to ❸ → ❷ → ❶.
  2. Remove the capstan motor from the lower side (❹).
  3. Be sure to connect the capstan motor (M2) and flexible cable (89) securely (❹, ❺).



6. The pinch roller operation is defective.

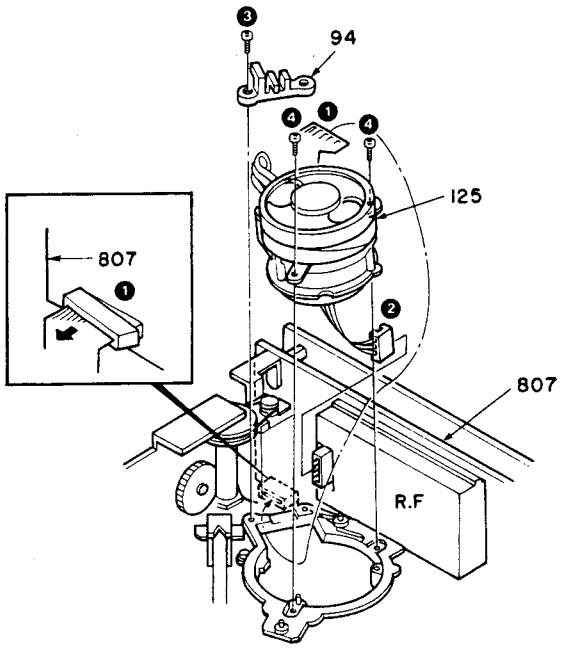
- When grease, oil, etc., is attached to the pinch roller, it slips between the tape, making tape transport impossible.
- As the reel motors do not rotate, the FG is not detected. The tape is unloaded and cassette ejected in 3 sec.

⑥ When grease, oil, etc., is attached to the pinch roller: Clean with a cotton swab soaked in DIAPHRON fluid. Also clean the capstan shaft with a DRY cotton swab.
Pinch roller pressure: More than 200 gf.

TROUBLESHOOTING

7. The drum operation is defective.

- Drum motor overrun:
  Tape is not played.
  Cassette is ejected when the rise does not occur within 500 ms after the ON SW pulse.
- Path adjustment:
  The envelope wave is not output.



Drum Head Replacement

- Unstable envelope waveform: The tension is weak.
- Tape is curled. (This should be adjusted at the same time as the path adjustment.)
- Dirty drums
- Dirt attached on the pinch roller
- Dirt attached on the exterior of the guide roller.

⑦ Check if the motor FG is absent.
Check for improper connection (contact) of the connector.

- Connect the connector properly.
- Drum head eye blockade
  Play the semi-alignment tape (for tracking adjustment) and check if the waveform is output using an oscilloscope.
- Cleaning method
  Apply a chamois soaked in DIAPHRON fluid lightly to the drums (never move it on the drums), and turn the upper drum.

Improper connection (poor contact)

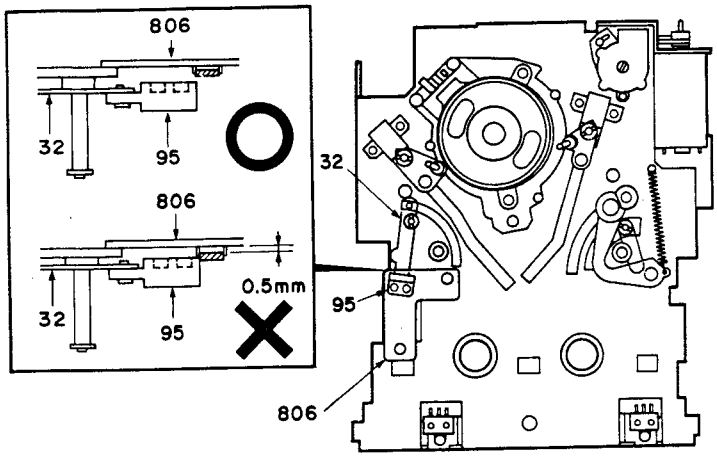
- Connector to the RF amp
  Connect the connector properly.
- Inverted A CH and B CH soldering.
- Drum head replacement procedure
  1. Disconnect the flexible cable (❶) from the X29-(B/3).
  2. Disconnect the connector (❷) from the RF unit.
  3. Remove the 2 screws (❸) fixing the holder (94).
  4. Remove the 2 screws (❹) fixing the drum head (125), lift the heads and take them out.
     (When attaching new heads, insert the RF connector cord between the motor and RF unit.)

- Adjust to 4.5 g-cm ±0.5 g-cm using the tension cassette (TW-7231).
- The curl should be removed by the guide pole.
  Adjust the guide pole with a hex wrench.
- Apply a chamois soaked in DIAPHRON fluid lightly to the drums (never move it on the drums), and turn the upper drum.
- Wipe with a cotton swab soaked in DIAPHRON fluid.
- Wipe with a dry cotton swab.

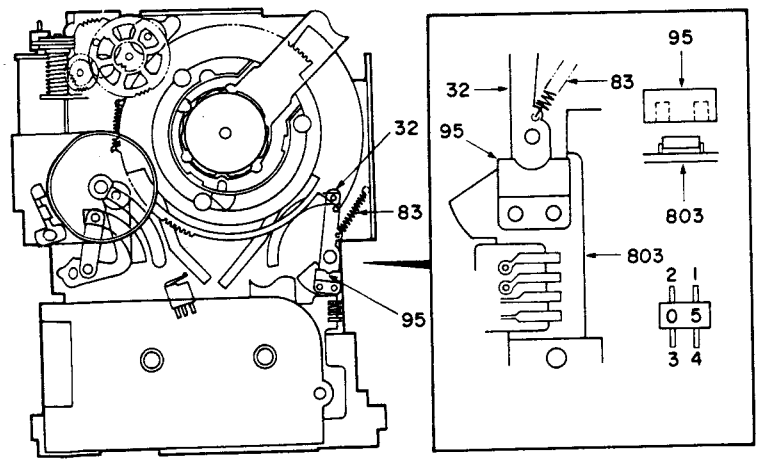
TROUBLESHOOTING

8. The tension cannot be adjusted (at the time of path adjustment).

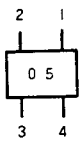
- The Hall element may be attached improperly.
- The soldering method may be incorrect.
- When the Hall element is soldered apart from the board surface, it contacts the tension magnet, blocking the movement to the normal position.



- The soldering between the flexible PC board and Hall element may be defective.



Hall element
1, 3 — Inputs
2, 4 — Outputs
Resistance Input (450 to 900 ohms)
Output (Input × 1.7)

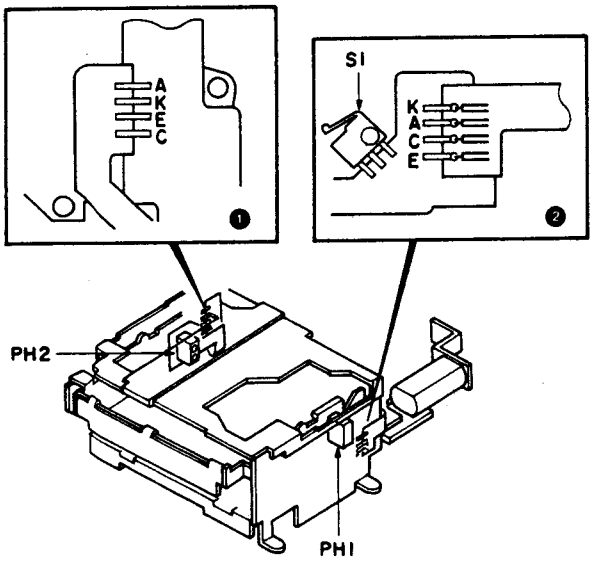


- The magnet polarity may be inverse.
  N pole: Painted white.
  S pole: Natural color (black).

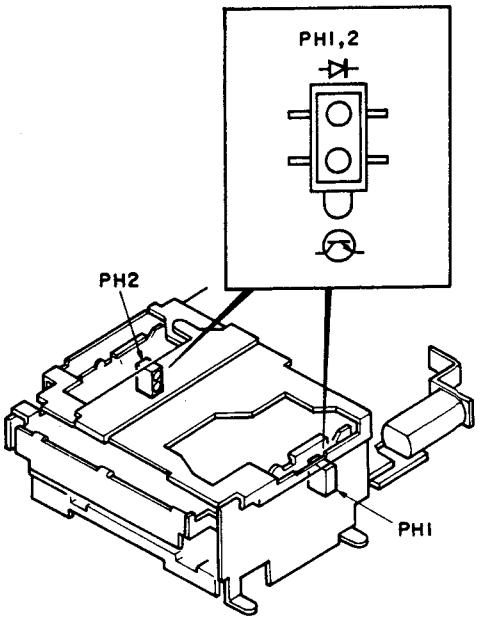
TROUBLESHOOTING

9. The tape end sensor operation is defective (Mechanism Ass'y).

- When the reel motor rotates after the cassette is inserted:
  Both the supply and takeup sides are defective.
- If both the supply and takeup sides are normal, "beep" sound is generated and the cassette is ejected.
- If the takeup side is defective, only the "beep" sound is heard but the cassette is not ejected.
- If the supply side is defective, the cassette is ejected but the "beep" sound is not generated.
- The tape is kept wound at the tape end, causing tape damage or drum head eye blockade.



⑨ Defective soldering (Flexible PC board)



Insert a cassette without tape and observe the output at the flexible PC board.

OUT—GND 1.1V

TROUBLESHOOTING

[Defect in tape unloading]

Tape is not unloaded although the EJECT button is pressed.

- The tape loading motor operation may be defective. (Refer to the item describing the tape loading motor operation defect.)

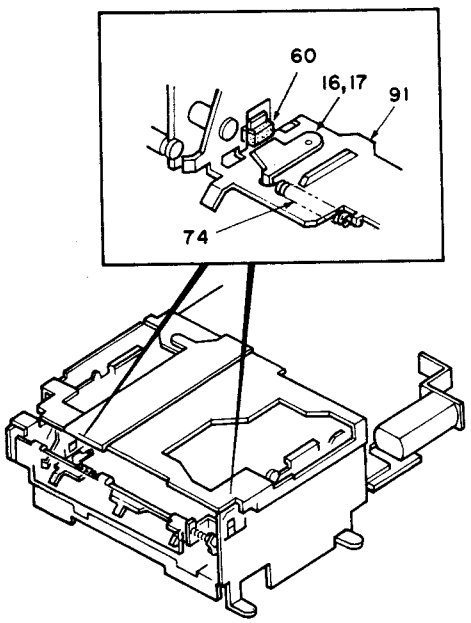
[Defect in Cassette Unloading]

The cassette is not unloaded although the EJECT button is pressed.

- The cassette loading motor operation may be defective. (Refer to the item describing the cassette loading motor operation defect.)

The cassette pops out of the mechanism when it is ejected.

- The brake operation may be defective.
- The brake pad may be defective.
- The spring may be missing.
- The brake operation may be malfunctioning.



- Brake operation malfunction

1. To replace the spring (74), remove it from the external side of the mechanism.
2. To replace the brake rubber (60), refer to the mechanism disassembly procedure.

ADJUSTMENTS

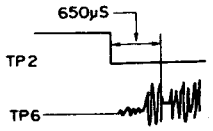
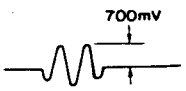
This section serves as a reference for the adjustments of the PC boards of the KDT-99.

1. Measuring instruments

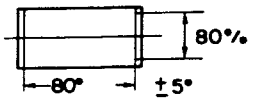
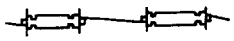
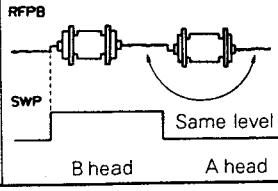
(1) Oscilloscope: 4-trace scope is desirable (with delay).
(2) Wide-band wow & flutter meter
(3) Digital voltmeter
(4) DC power supply (3 lines, 6.5 V, 5 V and −5 V):
Use the DC/DC converter used with the set.
(5) Alignment jig
(6) Probes
(7) Test tapes:
path adjustment, Level (TY-7111) with low recording level, back tension, alignment

2. Adjustment conditions

- The mechanism shall be fixed on the chassis securely using screws.
- The microprocessors shall be in the test mode.
- The adjustments shall be conducted under normal temperature (20 to 25°C) and normal humidity (40%).

Order	Item	Input setting	Output setting	Main unit setting	Adjustment point	Adjustment method	Figure
Put the unit in the test mode. (Press the RESET key while depressing the MEMORY key, and hold the MEMORY key until the FL display lights.)							
1	Back tension		TW-7131	PLAY	VR5 (X13 C/3)	Supply side: 4.5 g-cm	
2	Reverse torque		TW-7131	REVERSE PLAY SEARCH DOWN: 4 times	VR25 (X29 C/3)	Takeup side: 12 g-cm ±3 g-cm	
3	Takeup torque		TW-7131	PLAY	Confirmation	Takeup side: 12 g-cm ±3 g-cm	
4	FF/REW torque		TW-7231	FF/REW	Confirmation	Takeup/supply: 28 g-cm or more	
5	Tape unloading		TW-7131	EJECT	Confirmation	Supply: 8 g-cm ±3 g-cm	
6	ATF operating point		Connect an oscilloscope across TP8 (VREF) and TP9 (ERR)(X29-C/3).	Note 1) ATF OFF WINDOW OFF	VR8 (X29 A/3)	0 V±50 mV	(a)
7	×1.5 speed capstan speed adjustment	TY-7251	Connect a frequency counter to TP10 (FG).	ATF OFF WINDOW OFF PLAY	VR20 (X29 C/3)	839 Hz±3 Hz	(b)
8	Delayed PG	TY-7251	Connect TP2 (DP) to CH1 and TP6 (X29-A/2) to CH2.	ATF ON WINDOW OFF PLAY	VR2 (X29 B/3)	Time from the negative-going edge of DPG (TP2) to the marker of test tape (non-signal section of A head). 	(c)
9	Drum servo	Recorded tape	Connect an oscilloscope to TP1 (DG).	PLAY	VR1 (X29 B/3)	(680 mVo-p or more) 	(d)
10	×4.5 speed capstan speed adjustment	TY-7251	Connect a frequency counter to TP10 (FG).	SEARCH UP: 1 time PLAY	Confirmation	2.51 kHz±500 Hz	(e)
11	Normal capstan speed adjustment	TY-7111	Connect a frequency counter to TP10 (FG).	ATF OFF WINDOW OFF PLAY	VR21 (X29 C/3)	559 Hz±3 Hz	(f)
12	×3 speed capstan speed adjustment	TY-7111	Connect a frequency counter to TP10 (FG).	SEARCH UP: 1 time PLAY	Confirmation	1.67 kHz±500 Hz	(g)

ADJUSTMENTS

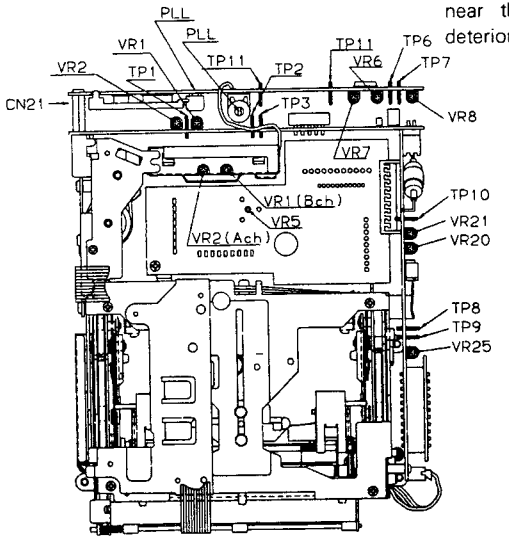
Order	Item	Input setting	Output setting	Main unit setting	Adjustment point	Adjustment method	Figure
13	ATF pilot level	TY-7111	Connect an oscilloscope to TP7 (X29-A/2).	PLAY	VR7 (A) VR6 (B) (X29 A/3)	200 mVp-p 130 kHz at the home track.	(h)
14	ATF check	Recorded tape	Connect an oscilloscope to TP7 (X29-A/2).	PLAY	Confirmation	ATF shall be on the ON track.	(i)
15	Envelope adjustment	TY-7251	Connect an oscilloscope to TP6 (X29-A/3).	ATF ON WINDOW OFF PLAY	Path adjustment (Refer to the separate item.)	Optimize the envelope waveform. 	(j)
	Cancel the test mode by pressing the RESET key.						
16	PLL error voltage		Connect an oscilloscope to TP5.	Note 2) EJECT	VR5 (X29 A/3)	0 V ± 70 mV	(k)
17	VCO adjustment	Recorded tape	Connect an oscilloscope to TP5.	PLAY	L3 (X29 A/3)	 Set the whole to 0 V.	(l)
18	Note 3) RF adjustment		Note 4) Connect TP6 to CH1, and TP3 to CH2.	PLAY	VR1, 2 (X13 A/3)	Less than 5×10^{-2} (The noise level with the A head when RF is absent shall be set to the same as that with the B head.) 	(m)

Note 1)
- To turn ATF OFF, press the SEARCH UP key 4 times or REPEAT ALL once after loading. However, this does not always turn it OFF depending on the timing or the LED display could become inconsistent. Therefore, to check that the ATF is OFF, always observe the waveform at TP9 to make sure that the voltage is not rising and the tracking signal is not mixed.
- To turn WINDOW OFF, press the REPEAT ONE key once.
- When the cassette is ejected, ATF and WINDOW are both turned ON.

Note 2)
- The VCO is stopped during ejection to prevent radiation. However, the VCO circuit of some ICs could operate at this time, resulting in signal output at the phase comparator and in the rise of error voltage to nearly 5 V. As adjustment is impossible in such case, turn power OFF then ON again.

Note 3)
- Adjust RF so that the RF level is maximum while the error rate is minimum. However, when the noise of the portion without RF in the A CH is considerably high, adjust its level to a similar level to the B CH.

Note 4)
- Do not draw the error rate counter connector or pass it near the RF amp, otherwise the error rate may deteriorate.



REGLAGE

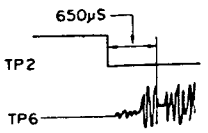
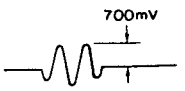
Cette section sert de référence pour les réglages des plaquettes de circuits imprimés du KDT-99.

1. Instruments de mesure

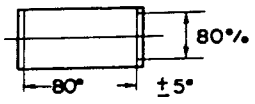
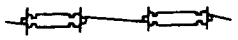
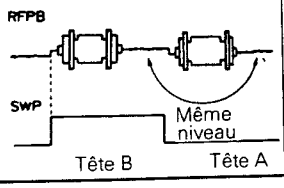
(1) Oscilloscope: scope à 4 traces est préférable (avec délai).
(2) Compteur large bande de pleurage et scintillement
(3) Voltmètre numérique
(4) Alimentation CC (3 lignes, 6,5 V, 5 V et −5 V):
Utiliser le convertisseur CC/CC utilisé avec l'appareil.
(5) Gabarit d'alignement
(6) Sondes
(7) Bandes test:
ajustement du chemin, niveau (TY-7111) avec bas niveau d'enregistrement, tension arrière, alignement

2. Conditions d'ajustement

- Le mécanisme doit être fermement fixé sur le châssis avec les vis.
- Le microprocesseurs doivent être en mode de test.
- Les ajustements doivent se faire sous une température normale (20 à 25°C) et une humidité normale (40%).

Ordre	Article	Réglage d'entrée	Réglage de sortie	Réglage de l'appareil principal	Point d'ajustement	Méthode d'ajustement	Figure
Mettre l'appareil en mode de test. (Presser touche RESET tout en pressant la touche MEMORY et maintenir la touche MEMORY jusqu'à ce que l'affichage fluorescent s'allume.)							
1	Tension arrière		TW-7131	PLAY	VR5 (X13 C/3)	Côté alimenté: 4,5 g-cm	
2	Couple inversé		TW-7131	LECTURE INVERSEE RECHERCHE DESCENDANTE: 4 fois	VR25 (X29 C/3)	Côté recueil: 12 g-cm ±3 g-cm	
3	Couple recueil		TW-7131	PLAY	Confirmation	Côté recueil: 12 g-cm ±3 g-cm	
4	Couple avance rapide/réembobinage		TW-7231	FF/REW	Confirmation	Recueil/alimentation: 28 g-cm ou plus	
5	Déchargement de bande		TW-7131	EJECT	Confirmation	Alimentation: 8 g-cm ±3 g-cm	
6	Point de fonctionnement ATF		Raccorder un oscilloscope entre TP8 (VREF) et TP9 (ERR) (X29-C/3).	Remarque 1) ATF OFF WINDOW OFF	VR8 (X29 A/3)	0 V±50 mV	(a)
7	Ajustement de vitesse de cabestan ×1,5 vitesse	TY-7251	Raccorder un compteur de fréquence à TP10 (FG).	ATF OFF WINDOW OFF PLAY	VR20 (X29 C/3)	839 Hz±3 Hz	(b)
8	PG retardé	TY-7251	Raccorder TP2 (DP) à CH1 et TP6 (X29 A/2) à CH2.	ATF ON WINDOW OFF PLAY	VR2 (X29 B/3)	Durée du bord négatif de DPG (TP2) au marqueur de bande test (section sans signal de tête A) 	(c)
9	Asservissement de tambour	Bande enregistrée	Raccorder un oscilloscope à TP1 (DG).	PLAY	VR1 (X29 B/3)	(680 mVo-p ou plus) 	(d)
10	Ajustement de vitesse de cabestan ×4,5 vitesse	TY-7251	Raccorder un compteur de fréquence à TP10 (FG).	RECHERCHE ASCENDANTE: 1 fois PLAY	Confirmation	2,51 kHz±500 Hz	(e)
11	Ajustement de vitesse de cabestan normale	TY-7111	Raccorder un compteur de fréquence à TP10 (FG).	ATF OFF WINDOW OFF PLAY	VR21 (X29 C/3)	559 Hz±3 Hz	(f)
12	Ajustement de vitesse de cabestan ×3 vitesse	TY-7111	Raccorder un compteur de fréquence à TP10 (FG).	RECHERCHE ASCENDANTE: 1 fois PLAY	Confirmation	1,67 kHz±500 Hz	(g)

REGLAGE

Ordre	Article	Réglage d'entrée	Réglage de sortie	Réglage de l'appareil principal	Point d'ajustement	Méthode d'ajustement	Figure
13	Niveau pilote ATF	TY-7111	Raccorder un oscilloscope à TP7 (X29-A/2).	PLAY	VR7 (A) VR6 (B) (X29 A/3)	200 mVp-p 130 kHz à la piste de départ.	(h)
14	Vérification ATF	Bande enregistrée	Raccorder un oscilloscope à TP7 (X29-A/2).	PLAY	Confirmation	ATF doit être la piste ON.	(i)
15	Ajustement d'enveloppe	TY-7251	Raccorder un oscilloscope à TP6 (X29-A/3).	ATF ON WINDOW OFF PLAY	Ajustement du chemin (se référer à l'article séparé.)	Optimiser la forme d'onde d'enveloppe. 	(j)
Annuler le mode de test en pressant la touche RESET.							
16	Tension erreur PLL		Raccorder un oscilloscope à TP5.	Remarque 2) EJECT	VR5 (X29 A/3)	0 V ± 70 mV	(k)
17	Ajustement VCO	Bande enregistrée	Raccorder un oscilloscope à TP5.	PLAY	L3 (X29 A/3)	 Régler le tout à 0 V.	(l)
18	Remarque 3) Ajustement HF		Remarque 4) Raccorder TP6 à CH1 et TP3 à CH2.	PLAY	VR1, 2 (X13 A/3)	Moins de 5×10^{-2} (Le niveau de bruit avec la tête A quand HF est absent doit être réglé comme selui avec la tête B.) 	(m)

Remarque 1) • Pour mettre ATF OFF, presser la touche SEARCH UP 4 fois ou REPEAT ALL une fois après chargement. Cependant, ceci ne le met pas toujours sur OFF selon le minutage ou l'affichage DEL peut devenir discontinu. Par conséquent, pour vérifier que ATF est OFF, toujours observer la forme d'onde à TP9 pour s'assurer que la tension ne s'élève pas et que le signal d'alignement n'est pas mélangé.

- Pour mettre WINDOW OFF, presser la touche REPEAT ONE une fois.
- Quand la cassette est éjectée, ATF et WINDOW sont tous deux ON.

Remarque 2) • Le VCO est arrêté pendant l'éjection pour éviter la radiation. Cependant, le circuit VCO de certains CI peuvent fonctionner à ce moment, résultant en une sortie de signal au comparateur de phase et dans la montée de la tension d'erreur jusqu'à près de 5 V. Comme l'ajustement est impossible dans un tel cas, couper l'alimentation et la refournir.

Remarque 3) • Ajuster HF pour que le niveau HF soit maximum alors que le taux d'erreur est minimum. Cependant, quand le bruit de la portion sans HF dans le CH A est très haut, ajuster son niveau jusqu'à un niveau similaire au CH B.

Remarque 4) • Ne pas tirer le connecteur de compteur de taux d'erreur ni le passer près de l'ampli HF sinon le taux d'erreur peut se détériorer.

ABGLEICH

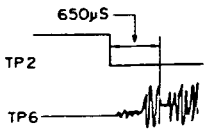
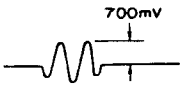
Dieser Abschnitt dient als Referenz für die Abgleichung der Platinen des KDT-99.

1. Meßinstrumente

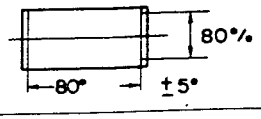
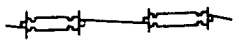
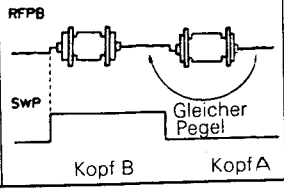
(1) Oszilloskop: Oszilloskop mit 4 Leuchtspuren (mit Verzögerung) ist wünschenswert.
(2) Breitband-Gleichlaufschwankungs-Meter
(3) Digital-Voltmeter
(4) Gleichstromquelle (3 Leitungen, 6,5 V, 5 V und −5 V): den Gleichstrom/Gleichstrom-Konverter des Gerätes verwenden.
(5) Abgleichlehre
(6) Meßfühler
(7) Test-Kassetten:
Bandweg-Einstellung, Pegel (TY-7111) mit niedrigem Aufnahmepegel, Rückspannung, Abgleichung

2. Abgleichbedingungen

- Die Mechanismen müssen mit Schrauben fest am Chassis angebracht sein.
- Die Mikroprozessoren müssen im Testmodus sein.
- Die Abgleichungen müssen bei normalen Temperaturen (20 bis 25°C) und normaler Luftfeuchtigkeit (405) durchgeführt werden.

Reihenfolge	Gegenstand	Eingangs-Einstellung	Ausgangs-Einstellung	Einstellung des Hauptgerätes	Abgleichpunkt	Abgleichmethode	Abbildung
Das Gerät in den Testmodus versetzen. (Die MEMORY-Taste gedrückt halten und die RESET-Taste drücken, die MEMORY-Taste gedrückt halten, bis die FL-Anzeige leuchtet.)							
1	Rückspannung		TW-7131	PLAY	VR5 (X13 C/3)	Abwickelseite: 4,5 g-cm	
2	Rückwärts-Drehmoment		TW-7131	REVERSE PLAY SEARCH DOWN: 4 mal	VR25 (X29 C/3)	Aufwickelseite: 12 g-cm ±3 g-cm	
3	Aufwickel-Drehmoment		TW-7131	PLAY	Überprüfung	Aufwickelseite: 12 g-cm ±3 g-cm	
4	FF/REW-Drehmoment		TW-7231	FF/REW	Überprüfung	Aufwickel/Abwickel: 28 g-cm oder mehr	
5	Kassetten-Auswurf		TW-7131	EJECT	Überprüfung	Abwickel: 8 g-cm ±3 g-cm	
6	ATF-Betriebspunkt		Ein Oszilloskop zwischen TP8 (VREF) und TP9 (ERR) (X29-C/3) anschließen.	Hinweis 1) ATF OFF WINDOW OFF	VR8 (X29 A/3)	0 V±50 mV	(a)
7	x 1,5 Drehzahl Tonwellen-Drehzahl-Einstellung	TY-7251	Einen Frequenzzähler an TP10 (FG) anschließen.	ATF OFF WINDOW OFF PLAY	VR20 (X29 C/3)	839 Hz±3 Hz	(b)
8	Verzögerter PG	TY-7251	TP2 (DP) mit Kanal 1 und TP6 (X29-A/2) mit Kanal 2 verbinden.	ATF ON WINDOW OFF PLAY	VR2 (X29 B/3)	Zeit von der negativ-weisenden Kante von DPG (TP2) zum Markierer der Testkassette (signalfreier Abschnitt von Kopf A) 	(c)
9	Trommel-Servo	Bespieltes Band	Ein Oszilloskop an TP1 (DG) anschließen.	PLAY	VR1 (X29 B/3)	(680 mVo-p oder mehr) 	(d)
10	x4,5, Drehzahl Tonwellen-Drehzahl-Einstellung	TY-7251	Einen Frequenzzähler an TP10 (FG) anschließen.	SEARCH UP: 1 mal PLAY	Überprüfung	2,51 kHz±500 Hz	(e)
11	Normale-Tonwellen-Drehzahl-Einstellung	TY-7111	Einen Frequenzzähler an TP10 (FG) anschließen.	ATF OFF WINDOW OFF PLAY	VR21 (X29 C/3)	559 Hz±3 Hz	(f)
12	x 3 Drehzahl Tonwellen-Drehzahl-Einstellung	TY-7111	Einen Frequenzzähler an TP10 (FG) anschließen.	SEARCH UP: 1 mal PLAY	Überprüfung	1,67 kHz±500 Hz	(g)

ABGLEICH

Reihenfolge	Gegenstand	Eingangs-Einstellung	Ausgangs-Einstellung	Einstellung des Hauptgerätes	Abgleichpunkt	Abgleichmethode	Abbildung
13	ATF-Pilotpegel	TY-7111	Ein oszilloskop an TP7 (X29-A/2) anschließen.	PLAY	VR7 (A) VR6 (B) (X29 A/3)	130 kHz an der Heimspur 200 mVp-p.	(h)
14	ATF-Prüfung	Bespieltes Band	Ein Oszilloskop an TP7 (X29-A/2) anschließen.	PLAY	Überprüfung	ATF muß auf ON-Spur sein.	(i)
15	Hüllkurfen-Abgleich	TY-7251	Ein Oszilloskop an TP6 (X29-A/3) anschließen.	ATF ON WINDOW OFF PLAY	Bandweg-Einstellung (Siehe separaten Punkt.)	Die Hüllkurven-Wellenform optimieren. 	(j)
Den Testmodus durch Drücken der RESET-Taste ausschalten.							
16	PLL-Fehlerspannung		Ein Oszilloskop an TP5 anschließen.	Hinweis 2) EJECT	VR5 (X29 A/3)	0 V ± 70 mV	(k)
17	VCO-Abgleich	Bespieltes Band	Ein Oszilloskop an TP5 anschließen.	PLAY	L3 (X29 A/3)	 Gesamt auf 0 V einstellen.	(l)
18	Hinweis 3) RF-Abgleich		Hinweis 4) TP6 mit Kanal 1 und TP3 mit Kanal 2 verbinden.	PLAY	VR1, 2 (X13 A/3)	Unter 5×10^{-2} (Der Rauschpegel mit dem Kopf A, wenn RF nicht vorhanden ist, wird auf den gleichen wie mit dem Kopf B eingestellt.) 	(m)

Hinweis 1)
- Zum Ausschalten von ATF die SEARCH UP-Taste 4 mal oder REPEAT ALL einmal nach dem Laden drücken. Hierdurch erfolgt das Ausschalten jedoch nicht immer, abhängig vom Takt, oder die LED-Anzeige kann inkonsistent werden. Daher zum Überpüfen, ob ATF ausgeschaltet ist, immer die Wellenform an TP9 prüfen, um sicherzustellen, daß die Spannung nicht steigt und das Spurlagensignal nicht gemischt ist.
- Zum Ausschalten von WINDOW die REPEAT ONE-Taste einmal drücken.
- Wenn die Kassette ausgeworfen wird, werden ATF und WINDOW beide eingeschaltet.

Hinweis 2)
- Der VCO wird beim Auswerfen gestoppt, um Ausstrahlung zu verhindern. Der VCO-Schaltkreis von einigen IC kann jedoch zu dieser Zeit arbeiten, was in einem Signalausgang am Phasenkomparator und im Anstieg der Fehlerspannung auf fast 5 V resultiert. Da in diesem Fall der Abgleich unmöglich ist, die Spannung aus- und wieder einschalten.

Hinweis 3)
- RF so einstellen, daß der RF-Pegel maximal ist, während die Fehlerrate minimal ist. Wenn das Rauschen des Teils ohne RF im Kanal A beträchtlich hoch ist, seinen Pegel auf den gleichen Pegel wie Kanal B einstellen.

Hinweis 4)
- Den Fehlerraten-Zählerstecker nicht ziehen oder nahe dem RF-Verstärker bringen, weil sich sonst die Fehlerrate verschlechtern kann.

MECHANISM ADJUSTMENTS

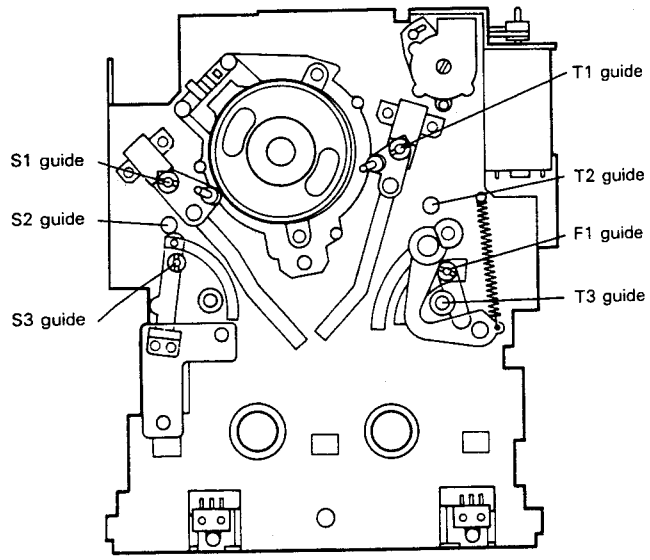
Rotary encoder adjustment

1. Press the [STOP key] to place the MD in the stop position.
   a. The tension regulator release pin shall be in the tension regulator OFF position.
   b. The clearance between the capstan shaft and pinch roller shall be 1.5 to 2.5 mm.
   c. The F guide shall be in contact with the edge of the square hole on the Mechanism Unit PC board.

   Adjust the rotary encoder position to meet the three requirements above.

   To decrease the pinch roller clearance, turn the encoder toward A. To increase the clearance, turn it toward B.
2. Press the [FWD key] and check that the MD is in the FWD position.
   a. The tension regulator release pin shall be in the tension regulator ON position.
   b. The pinch roller shall be in contact with the capstan.

   Check the two requirements above.
3. Press the [STOP key] again, and check the requirements in step 2 again.



Surface loading situation

Tape path adjustment

1. After replacing the drum or S1/T1 guides:
   a. With FWD, adjust first the S1 guide then F1 guide so that the RF is as shown in the illustration.
   b. With ATF offset, fine-adjust the S1 and T1 guides to make the RF waveform small while maintaining its shape.

   Note: Do not adjust the fixed guides (S3, S2, T2, T3) and F guide at this time.
2. Replacement of fixed guide (S3, S2, T2, T3) or F guide

   Note: When several guides have been replaced, adjust each guide independently.

Tracking tape
Use TY-7251.

   a. F guide replacement
      1) With FWD, place the F guide along the lower edge of tape.
      2) Also check that the tape is along the lower edge of the T3 guide without being curled.
   b. S2 guide replacement
      1) With FWD, move the S2 guide upward until it is placed along the lower edge of tape (it shall not be applied to tape with strong force).
      2) Also check that the tape is along the lower edge of the S3 guide without being curled.
   c. T2 guide replacement
      1) With FWD, move the T2 guide upward until it is placed along the lower edge of tape (it shall not be applied to tape with strong force).
      2) Also check that the tape is along the lower edge of the T3 guide. If not, return to step 1) again.
   d. S3 and T3 guide replacement
      1) With FWD, adjust so that the tape is along the lower flange of the S3 and T3 guides.

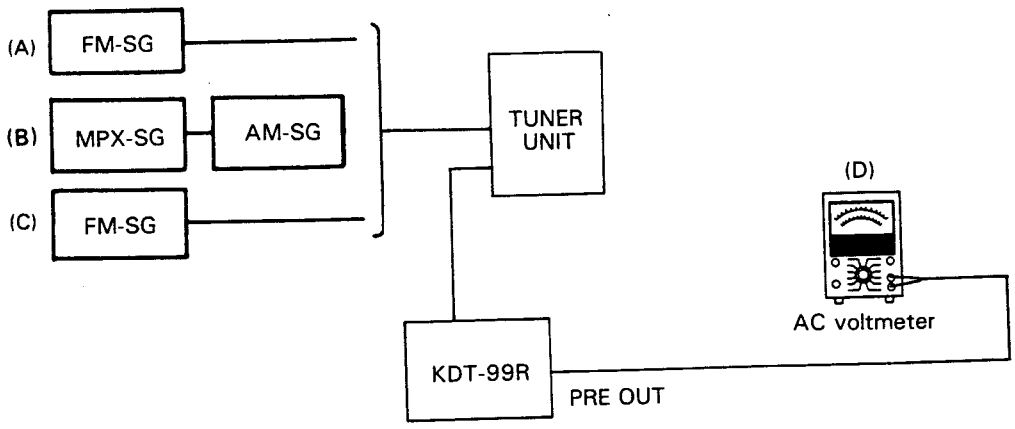
   Notes 1: Perform all of above items a, b, c and d.
   2: Before tape path adjustment, ensure that the back tension torque has been adjusted to 3 to 4 g-cm.

ADJUSTMENT (TUNER)

Set the controls and switches as follows.
BALANCE :Center position ATT :OFF
FADER :Center position EQ :Flat position

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	RECEIVER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
FM SECTION		Selector : FM					
1	DISCRIMINATOR	(A) 98.1MHz 0 dev 60dBμV(ANT input)	Connect a DC voltmeter to CN1. (X05-)	FM 98.1MHz	T1 (X05-)	0V	(a)
2	SEPARATION	(B) 98.1MHz 1kHz,±68.25kHz dev Selector:L or R Pilot:±6.75kHz dev 60dBμV(ANT input)	(D)	FM 98.1MHz	VR4 (X05-)	Minimum crosstalk. A compromise adjutment may be required if left-to-right and right-to-left separations are unequal.	
3	ANRC	(B) 98.1MHz 1kHz,±68.25kHz dev Selector:L or R Pilot:±6.75kHz dev 35dBμV(ANT input)	(D)	FM 98.1MHz	VR1 (X05-)	Separation:10dB	
4	STOP LEVEL	(A) 98.1MHz 1kHz,±75kHz dev 20dBμV(ANT input)	TP1 (X05-)	FM 98.1MHz	VR2 (X05-)	TP1:0V	
5	SOFT MUTE LEVEL	(A) 98.1MHz 1kHz,±75kHz dev 60dBμV→No input	(D)	FM 98.1MHz	VR3 (X05-)	Output Noise level -25dB (When not add any signal to ANT terminal.)	
6	S-METER	(A) 98.1MHz 0 dev 45dBμV(ANT input)	S-meter ind.	FM 98.1MHz	VR7 (X05-)	Position at which all S-meter indicators start to light.	
After the ANRC adjustment, perform the separation.							
AM SECTION		Selector : AM					
<1>	STOP LEVEL	(C) 999kHz 400Hz,30% mod 35dBμV(ANT input)	TP1 (X05-)	AM 999kHz	VR5 (X05-)	TP1:0V	
<2>	S-METER	(C) 999kHz 400Hz,30% mod 74dBμV(ANT input)	S-meter ind.	AM 999kHz	VR6 (X05-)	Position at which all S-meter indicators start to light.	

KDT-99R(K)(E)

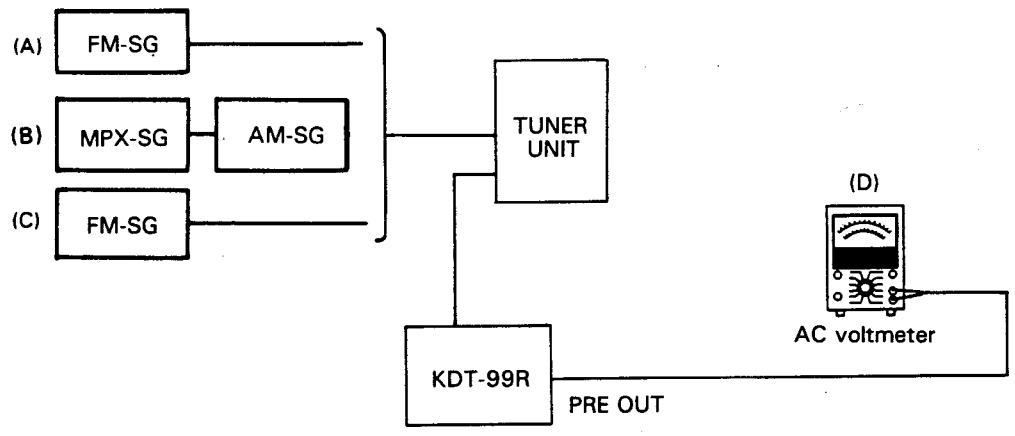


REGLAGES (TUNER)

Régler les controles et les boutons comme suit.
BALANCE :Position centre ATT :OFF
FADER :Position centre EQ :Position d'uniformité

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU TUNER (AMPLI-TUNER)	POINTS DE L'ALIGNEMENT	ALIGNER POUR	FIG.
SECTION MF		Selecteur: FM					
1	DISCRIMINATEUR	(A) 98,1MHz 0dév 60dBμV(Entrée ANT)	Connecter un voltmètre CC entre à CN1. (X05-)	FM 98,1MHz	T1 (X05-)	0V	(a)
2	SEPARATION	(B) 98,1MHz 1kHz.±68,25kHz dév Selecteur: L ou R Pilote:±6,75kHz dév 60dBμV(Entrée ANT)	(D)	FM 98,1MHz	VR4 (X05-)	Diaphone minimale. Un compromis de réglage peut être nécessaire si les séparations de gauche à droite et de droite à gauche sont inégales.	
3	ANRC	(B) 98,1MHz 1kHz.±68,25kHz dév Selecteur: L ou R Pilote:±6,75kHz dév 35dBμV(Entrée ANT)	(D)	FM 98,1MHz	VR1 (X05-)	Séparation:10dB	
4	NIVEAU D'ARRET	(A) 98,1MHz 1kHz.±75kHz dév 20dBμV(Entrée ANT)	TP1 (X05-)	FM 98,1MHz	VR2 (X05-)	TP1:0V	
5	NIVEAU DE SOFT MUTE	(A) 98,1MHz 1kHz.±75kHz dév 60dBμV→Entrée No	(D)	FM 98,1MHz	VR3 (X05-)	Bruit de niveau de sortie -25dB (Sous non correspondance d'antenne.)	
6	COMPTEUR DE SIGNAL	(A) 98,1MHz 0dév 45dBμV(Entrée ANT)	Les indicateurs de compteur de signal.	FM 98,1MHz	VR7 (X05-)	Position à laquelle tous les indicateurs de compteur de signal commencent à s'allumer.	
Après le réglage ANRC, effectuer à nouveau le réglage de séparation.							
SECTION MA		Selecteur:AM					
<1>	NIVEAU D'ARRET	(C) 999kHz 400Hz. 30% mod 35dBμV(Entrée ANT)	TP1 (X05-)	AM 999kHz	VR5 (X05-)	TP1: 0V	
<2>	COMPTEUR DE SIGNAL	(C) 999kHz 400Hz. 30% mod 74dBμV(Entrée ANT)	Les indicateurs de compteur de signal.	AM 999kHz	VR6 (X05-)	Position à laquelle tous les indicateurs de compteur de signal commencent à s'allumer.	

KDT-99R(K)(F)

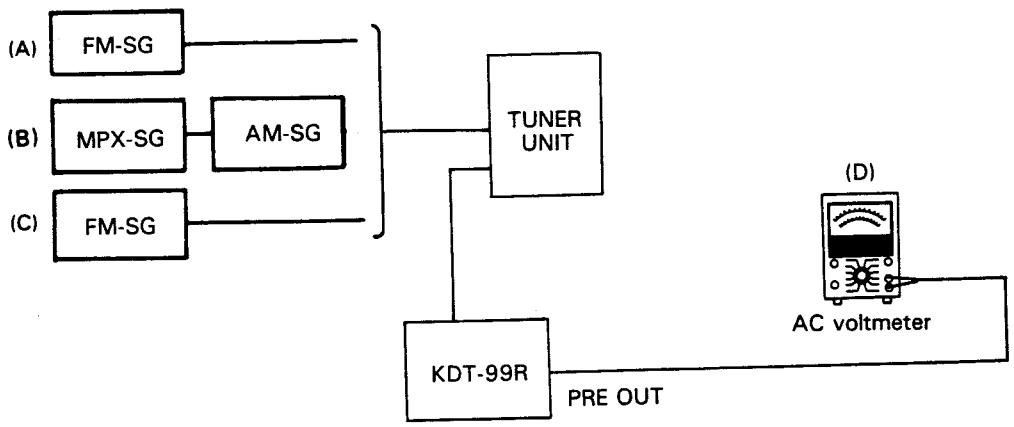


ABGLEICH (TUNER)

Die Regler und Knöpfe wire folgt einstellen.
BALANCE :Mittelage ATT :OFF
FADER :Mittelage EQ :Linear-Position

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	TUNER(RECEIVER)-EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB.
UKW-ABTEILUNG		Selector:FM					
1	DISKRIMINATOR	(A) 98,1MHz 0 Hub 60dBμV(ANT-Eingang)	Einen Gleich-spannungsmesser zwischen zu CN1 anschließen. (X05-)	FM 98,1MHz	T1 (X05-)	0V	(a)
2	STEREO KANAL TRENNUNG	(B) 98,1MHz 1kHz.±68,25kHz Hub Wähler: L oder R Pilot:±6,75kHz Hub 60dBμV(ANT-Eingang)	(D)	FM 98,1MHz	VR4 (X05-)	Minimales Übersprechen. Einen Ausgleichregelung kann notwendig sein, falls links zu rechts und rechts zu links Trennungen ungleich sind.	
3	ANRC	(B) 98,1MHz 1kHz.±68,25kHz Hub Wähler:L oder R Pilot:±6,75kHz Hub 35dBμV(ANT-Eingang)	(D)	FM 98,1MHz	VR1 (X05-)	Trennung:10dB	
4	HALT PEGEL	(A) 98,1MHz 1kHz.±75kHz Hub 20dBμV(ANT-Eingang)	TP1 (X05-)	FM 98,1MHz	VR2 (X05-)	TP1:0V	
5	SOFT MUTE PEGEL	(A) 98,1MHz 1kHz.±75kHz Hub 60dBμV→No Eingang	(D)	FM 98,1MHz	VR3 (X05-)	Ausgang Geräusch Pegel -25dB (Wenn Antenna stecker Nicht anschließen.)	
6	SIGNALMETER	(A) 98,1MHz 0 Hub 45dBμV(ANT-Eingang)	Signalmeter-Anzeige	FM 98,1MHz	VR7 (X05-)	Position, an der alle Signalmeter-Anzeige zu leuchten anfangen.	
Nach der ANRC-Einstellung die Separations-Einstellung(Stereo Kanal Trenung) erneut durchfuhren.							
MW-ABTEILUNG		Selector:AM					
<1>	HALT PEGEL	(C) 999kHz 400Hz. 30% mod 35dBμV(ANT-Eingang)	TP1 (X05-)	MW 999kHz	VR5 (X05-)	TP1:0V	
<2>	SIGNALMETER	(C) 999kHz 400Hz. 30% mod 74dBμV(ANT-Eingang)	Signalmeter-Anzeige	MW 999kHz	VR6 (X05-)	Position, an der alle Signalmeter-Anzeige zu leuchten anfangen.	

KDT-99R(K)(G)



VOLTAGE CHECK TABLE

RF AMP UNIT (X13-5690-00) (A/3)

IC1

9	5V
28	5V
45	5V

REEL SERVO UNIT (X13-5690-00) (B/3)

IC8

1	0.9V
2	0.6V
3	0.6V
4	–
5	1.4V
6	1.4V
7	1V
8	6V

IC11

12	1.4V
13	2.5V
14	1.4V
16	5V

IC12

1	1.4V
3	1.4V
4	1.4V
15	0V
16	5V

IC13

16	5V

Q10

E	–
C	–
B	–

Q11

E	–
C	–
B	–

Q12

E	–
C	1.4V
B	–

IC5

1	0.9V
2	1.3V
3	1.3V
5	0.9V
6	0.9V
7	0.6V
8	5V

IC6

7	6.5V
8	6.5V

Q3

E	–
C	–
B	0V

Q5

E	6V
C	–
B	–

Q13

E	–
C	2.1V
B	–

MECHA SENSOR (X13-5690-00) (C/3)

IC2

3	0.8V
6	0.8V
8	5V

IC3

1	0V
2	0V
24	5V

IC4

1	0V
2	5V
3	2.5V
8	5V

REEL CAPSTAN SERVO (X29-1830-00) (C/3)

IC20

16	5V

IC21

2	1.3V
3	1.3V
4	3.4V
5	3.4V
6	5.4V
7	5.4V
9	6V

IC22

5	6V
6	6V
13	6V
16	6V

IC23

8	6V

Q11

E	–
C	2.6V
B	5.8V

Q12

E	–
C	1.2V
B	5.8V

DRUM SERVO MECHA μCOM (X29-1830-00) (B/3)

IC1

2	2V
3	2V
5	1.8V
6	1.8V
8	5V

IC2

2	2.2V
6	1.8V
8	5V

IC3

4	3.2V
5	6V
9	6V
25	3.2V

IC4

8	5V

IC5

4	5V

IC6

3	5V
5	5V
10	5V
19	5V
34	5V
43	5V

IC7

8	5V

IC8

58	5V

Q1

E	–
C	6V
B	–

Q2

E	–
C	6V
B	–

Q4

E	6V
C	–
B	–

Q5

1	0.6V
2	–
3	–
4	2V
5	–

Q6

1	1V
2	–
3	–
4	1.8V
5	–

RAM/ECC ATF (X29-1830-00) (A/3)

IC10

1	–3.8V
3	–1V

IC12

26	5V

IC13

33	5V
48	5V
73	5V

IC14

1	5V
14	5V
22	5V
26	5V
30	5V
31	5V
58	5V

IC15

3	2.5V

IC16

7	–5V
13	2.5V

IC17

2	2.5V

IC18

14	5V

IC19

4	5V
8	2.5V
9	2.5V
10	2.5V

Q7

G	–
D	5V
S	–3.8V

SYSTEM μCOM (X14-223X-XX) (A/2)

IC1

33	5V

IC3

20	5V

IC9

1	5V
2	–
3	–

Q10

E	5V
C	–
B	–

DC/DC CONVERTER (W03-1475-05)

IC2

OUT	5V

TUNER UNIT (X05-3390-11)

AM TUNER

2	(0V)
4	(1.2 – 7.3V)
5	(4.8V)
6	(8.7V)
7	(3.1V)
8	(3.1V)

IC1

3	6.6V
4	2.5V
5	0V
6	5.6V
7 – 9	5.0V
11	9.2V
12	4.5V
13, 14	0V
15	1.2V
16	4.9V

IC2

1	9.0V
2	4.3V
3	3.0V
4	3.6V
5	4.0V
7 – 9	0V
10	0.5V
11	4.2V
12	3.2V
13, 15	3.5V
16	2.0V
17	1.6V
18	0.8V
19	0.5V
20	0.7V

IC3

1	0.3V
2	1.0V
3 – 5	0V
8	9.2V
9	1.0V
10	0V
11	0.8V
12, 13	4.8V
15	1.2V

IC4

1	3.0V
2, 3	3.0V
4	9.2V
5, 6	2.8V
7 – 10	3.0V
12 – 14	3.0V

IC5

1, 2	4.9V
3, 5	2.5V
6, 7	4.8V
8	9.5V

Q3

E	–
C	5.6V
B	–

Q16

E	10.1V
C	(9.5V)
B	–

Q17

E	10.1V
C	9.5V
B	–

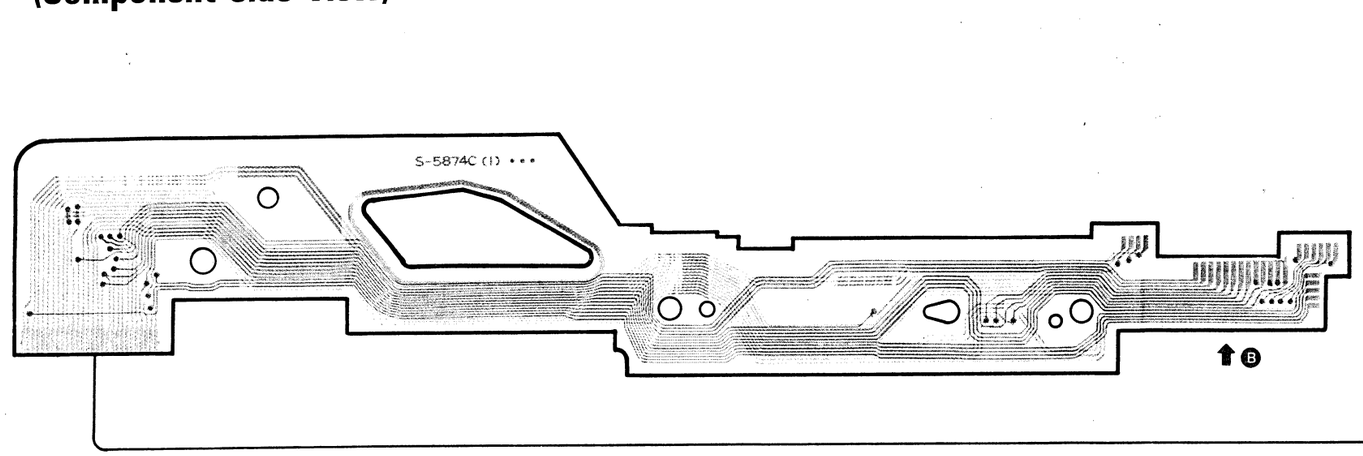
Q21

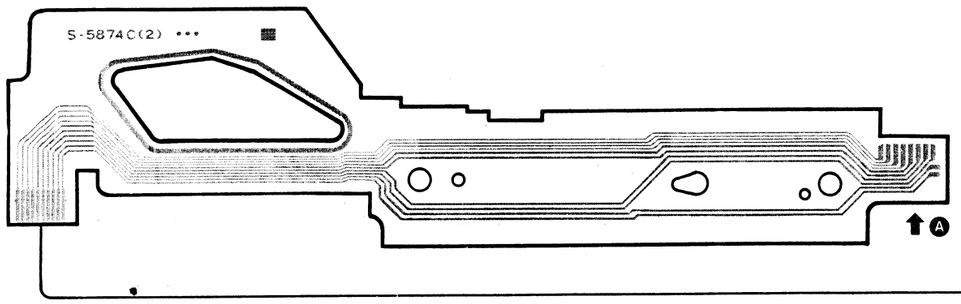
E	5.7V
C	–
B	5.2V

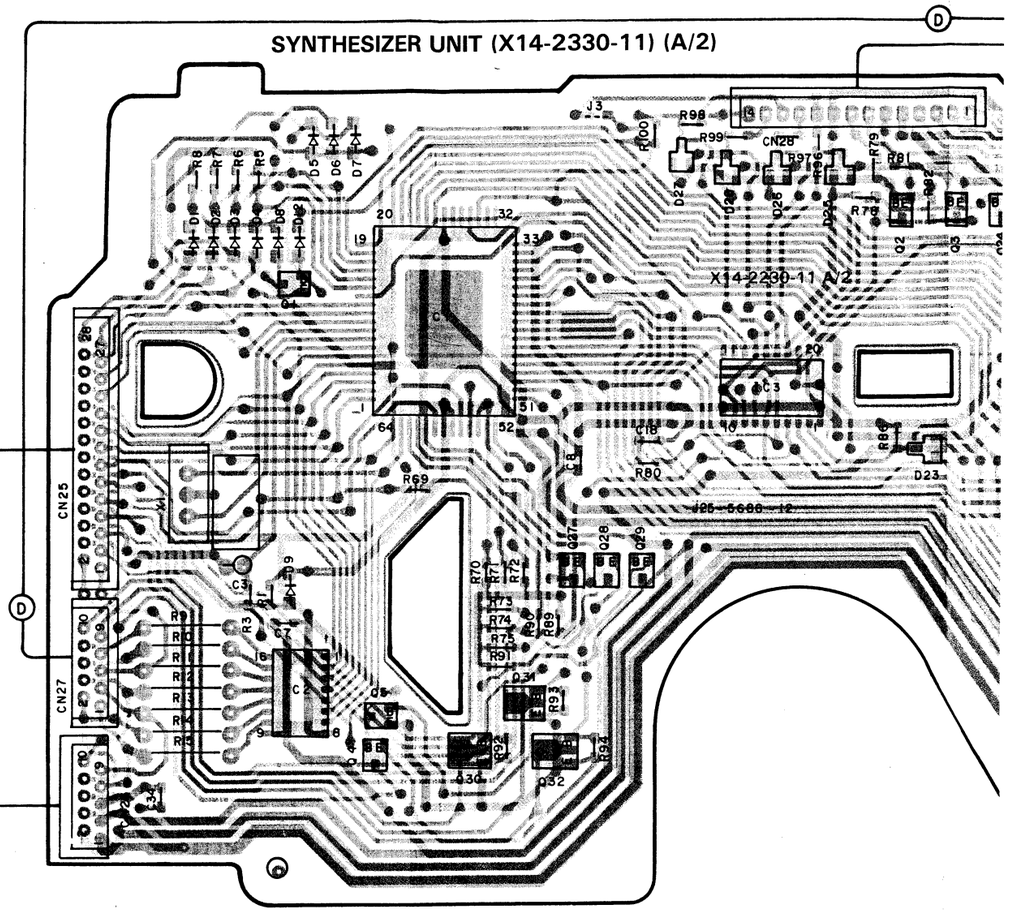
Q22

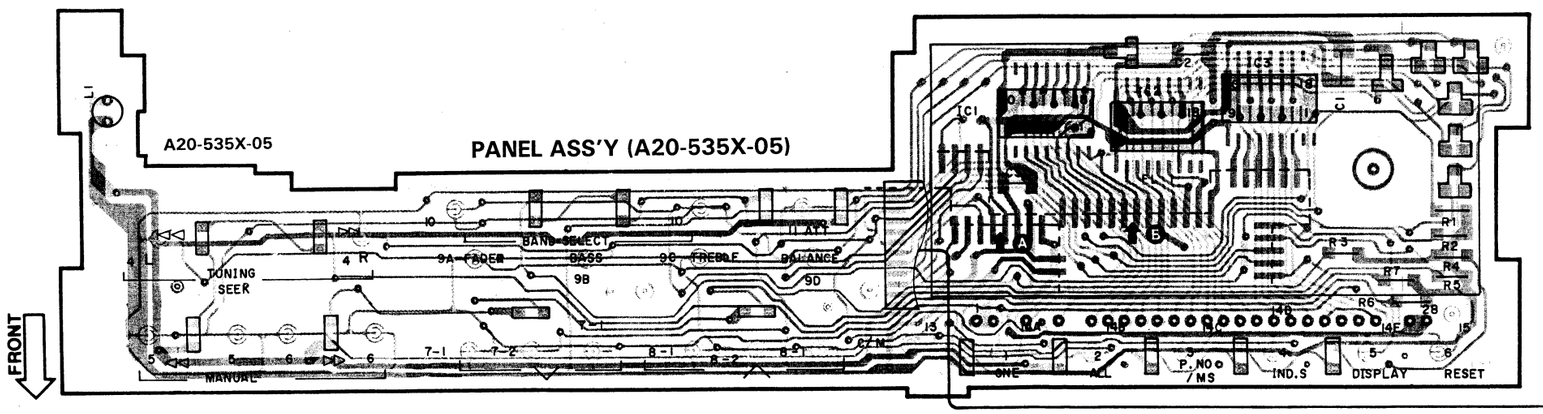
E	10.1V
C	–
B	9.5V

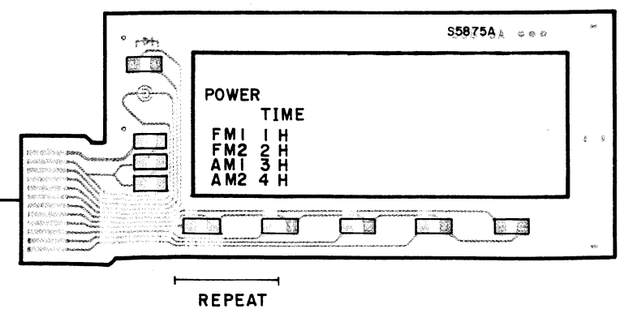
PC BOARD (1/2)
(Component side view)

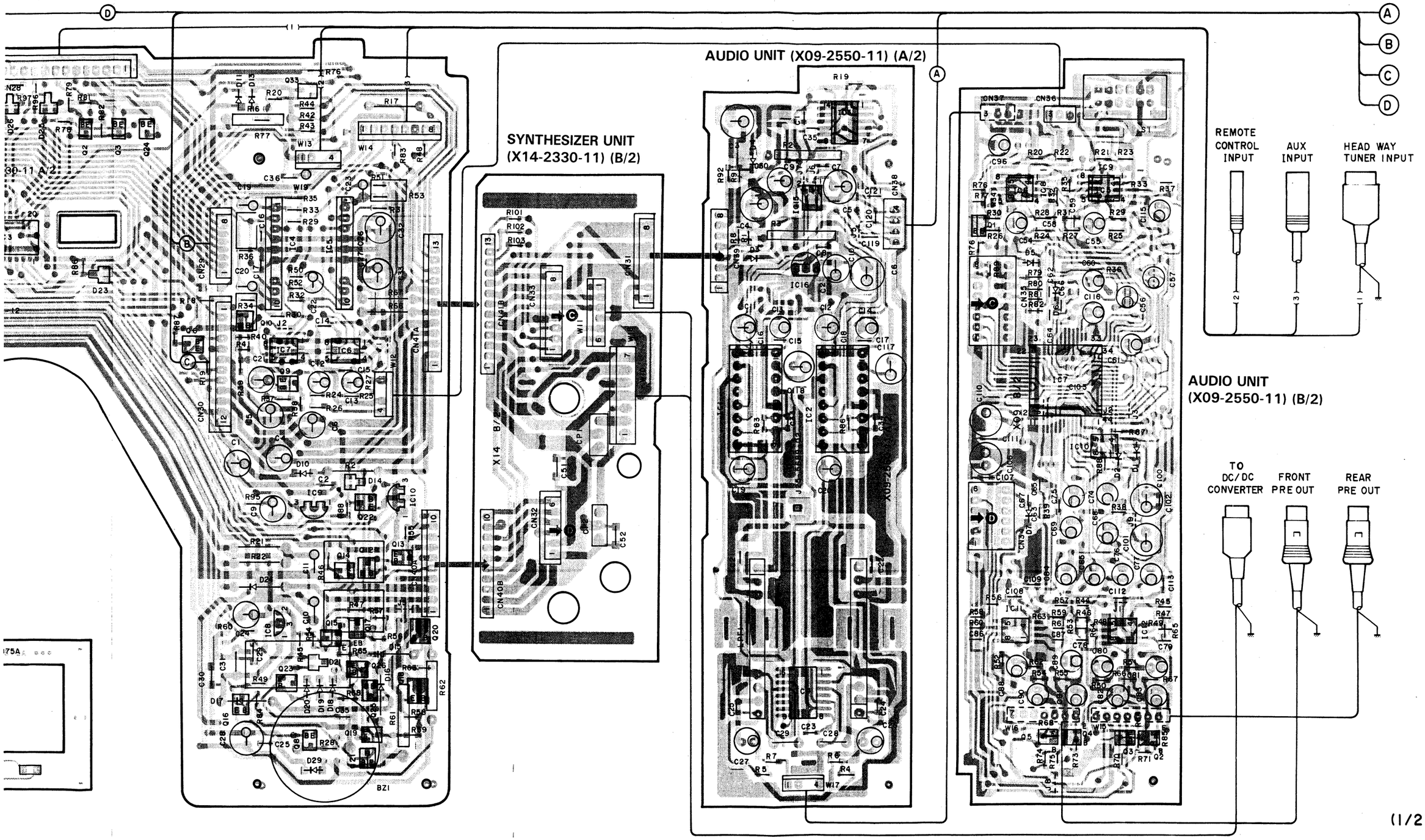






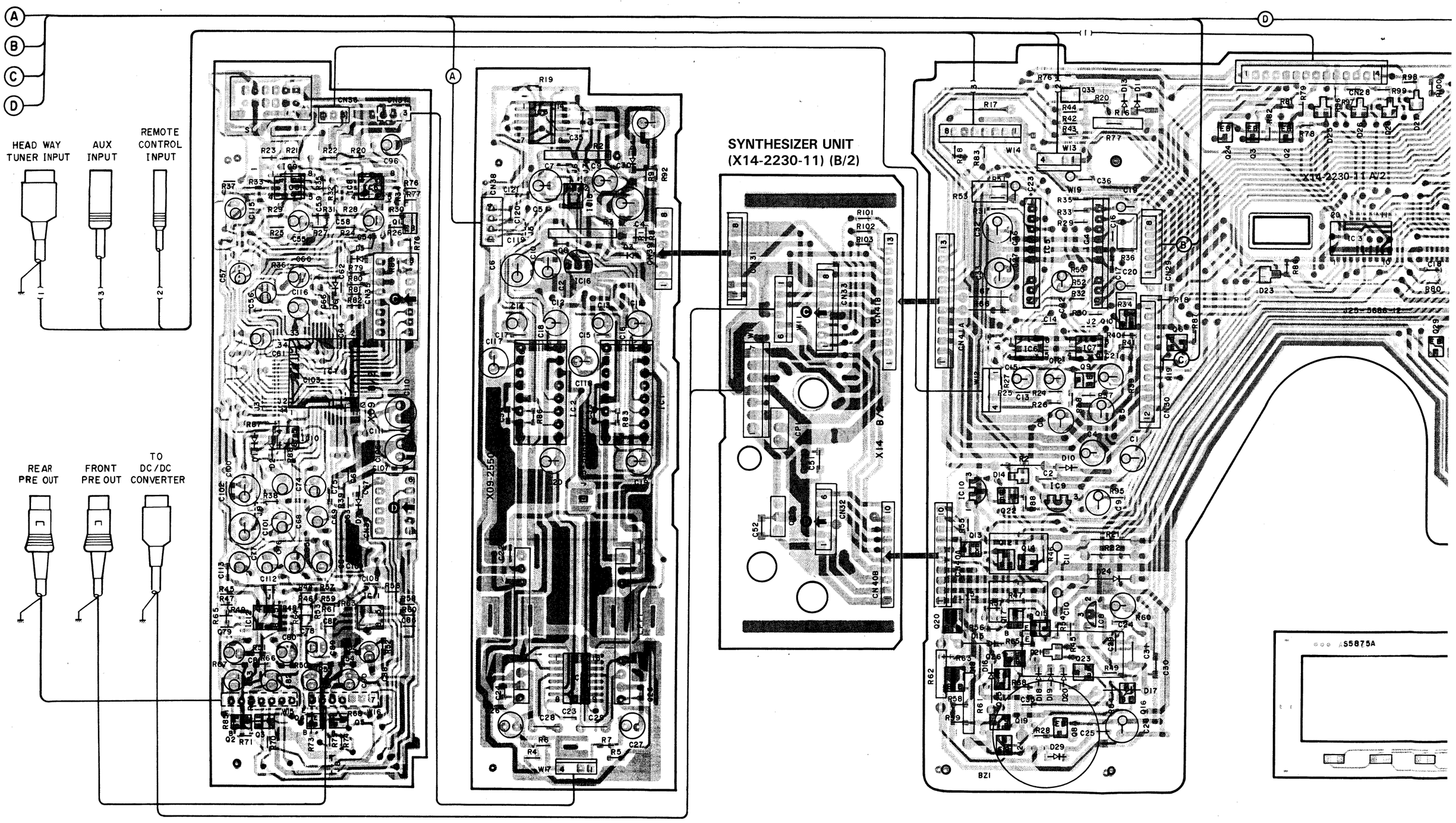


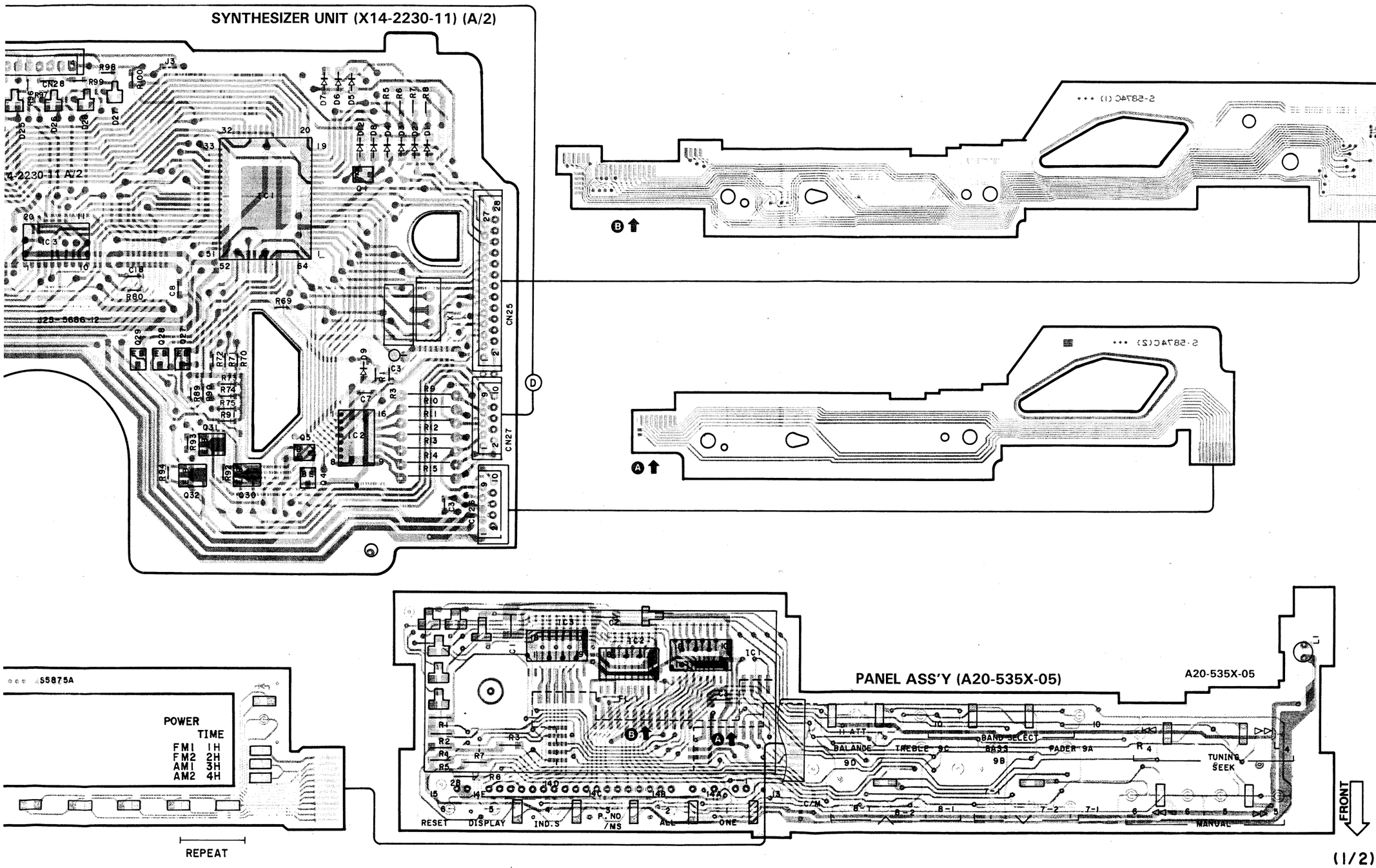




Refer to the schematic diagram for the values of resistors and capacitors.

PC BOARD (1/2)
(Foil side view)





Refer to the schematic diagram for the values of resistors and capacitors.

PC BOARD
(Component side view)

A B C D

(m)

ERROR RATE COUNTER

CONTROL CIRCUIT UNIT (X29-1830-00) (A/3)

X13-5690-11 A/3

X29-1830-00 A/3

PH2
E.O.T SENSOR

J25-5522-02

(d)

Oscilloscope

X13-5760-11

S4 S5 S7

CASSETTE LOADING MOTOR

POSITION SWITCH

TAPE LOADING MOTOR

HEATER

DURM

X29-1830-00 B/3

CONTROL CIRCUIT UNIT (X29-1830-00) (B/3)

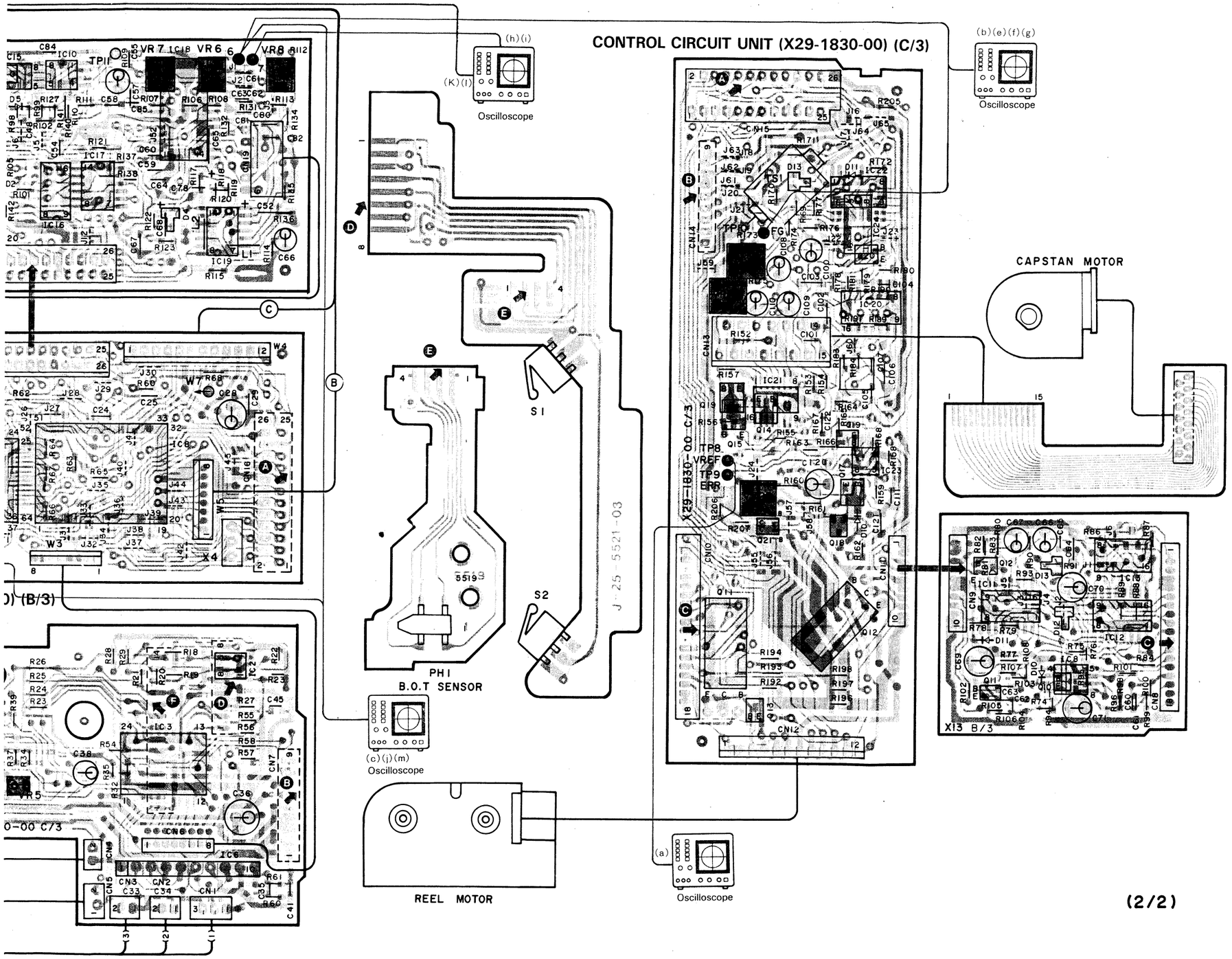
X13-5690-00 C/3

DEW SENSOR

FRONT

LEFT FRONT F.AD BAS TRE BAL RIGHT REAR

CONTROL CIRCUIT UNIT (X29-1830-00) (C/3)



(2/2)

Refer to the schematic diagram for the values of resistors and capacitors.

PC BOARD
(Foil side view)

CONTROL CIRCUIT UNIT (X29-1830-00) (C/3)

(b)(e)(f)(g)
Oscilloscope

CAPSTAN MOTOR

X29-1830-00 C/3

S1

S2

PHI
B.O.T SENSOR

(c)(j)(m)
Oscilloscope

(a)
Oscilloscope

REEL MOTOR

(h)(i)
(k)(l)
Oscilloscope

CONTROL CIRCUIT UNIT (X29-1830-00) (A/3)

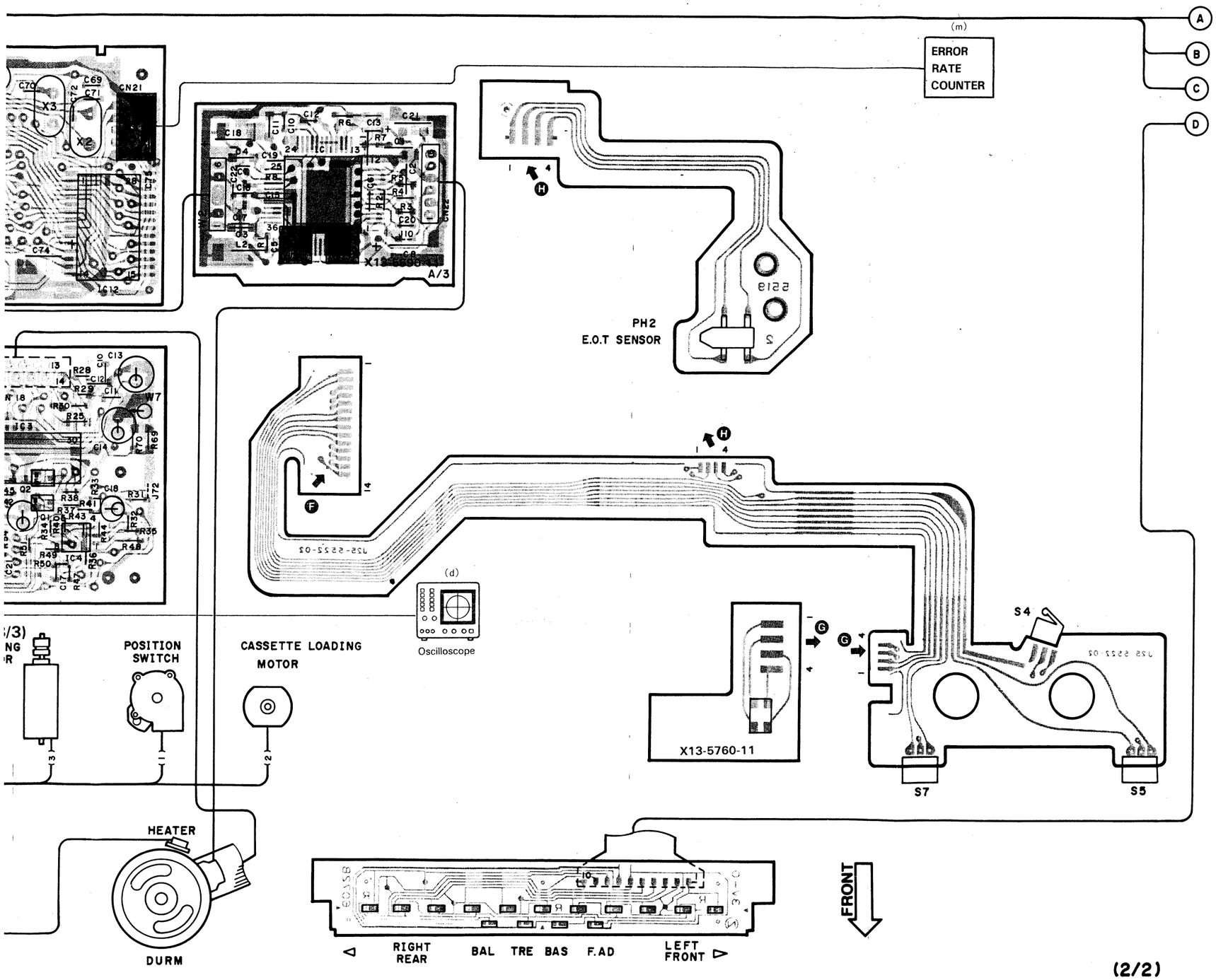
X29-1830-00 A/3

X13-5690-00 C/3

CONTROL CIRCUIT UNIT (X29-1830-00) (B/3)

TAPE LOADING
MOTOR

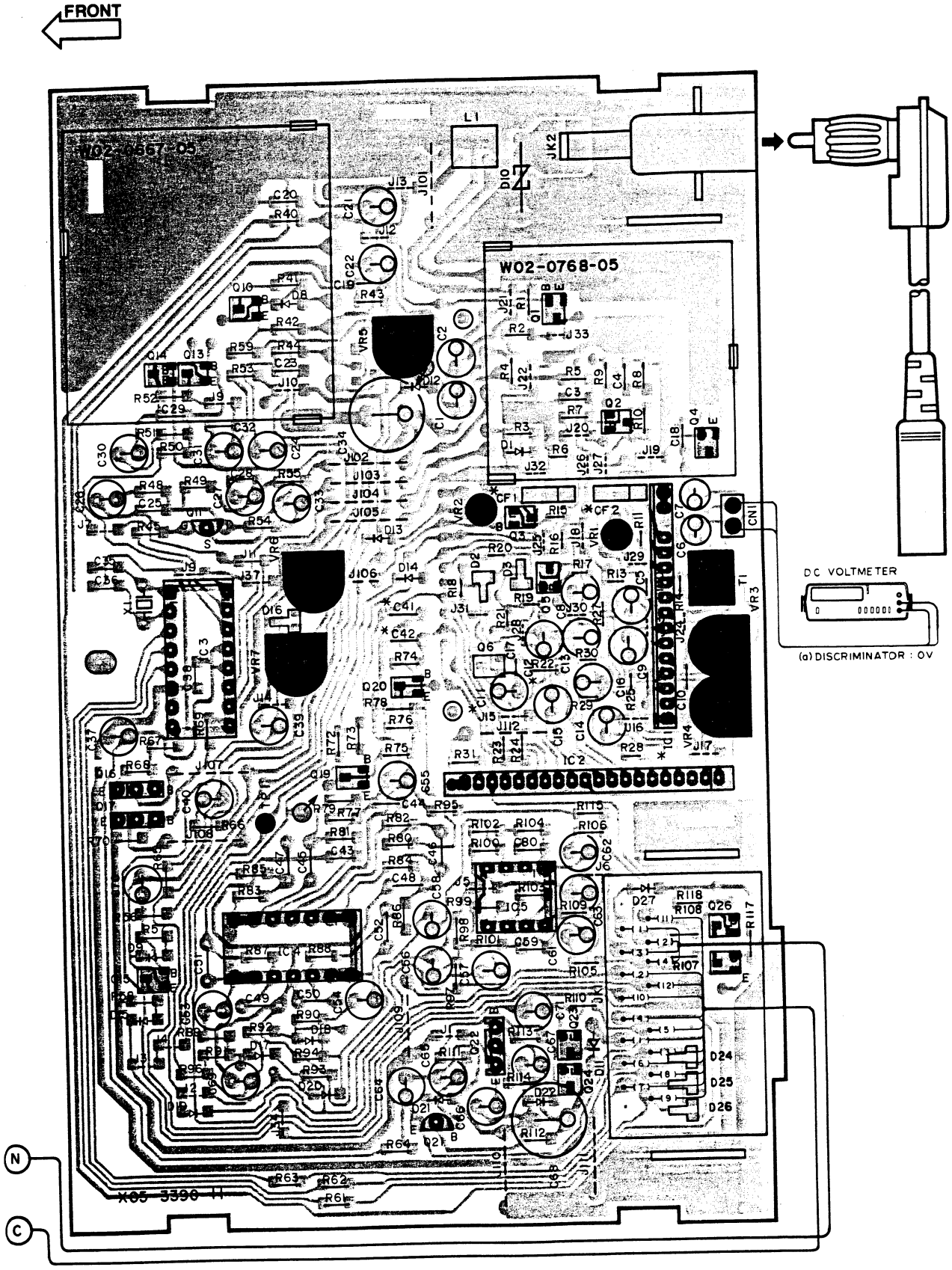
DEW SENSOR



Refer to the schematic diagram for the values of resistors and capacitors

PC BOARD (TUNER)

(Component side view) TUNER UNIT (X05-3390-11)

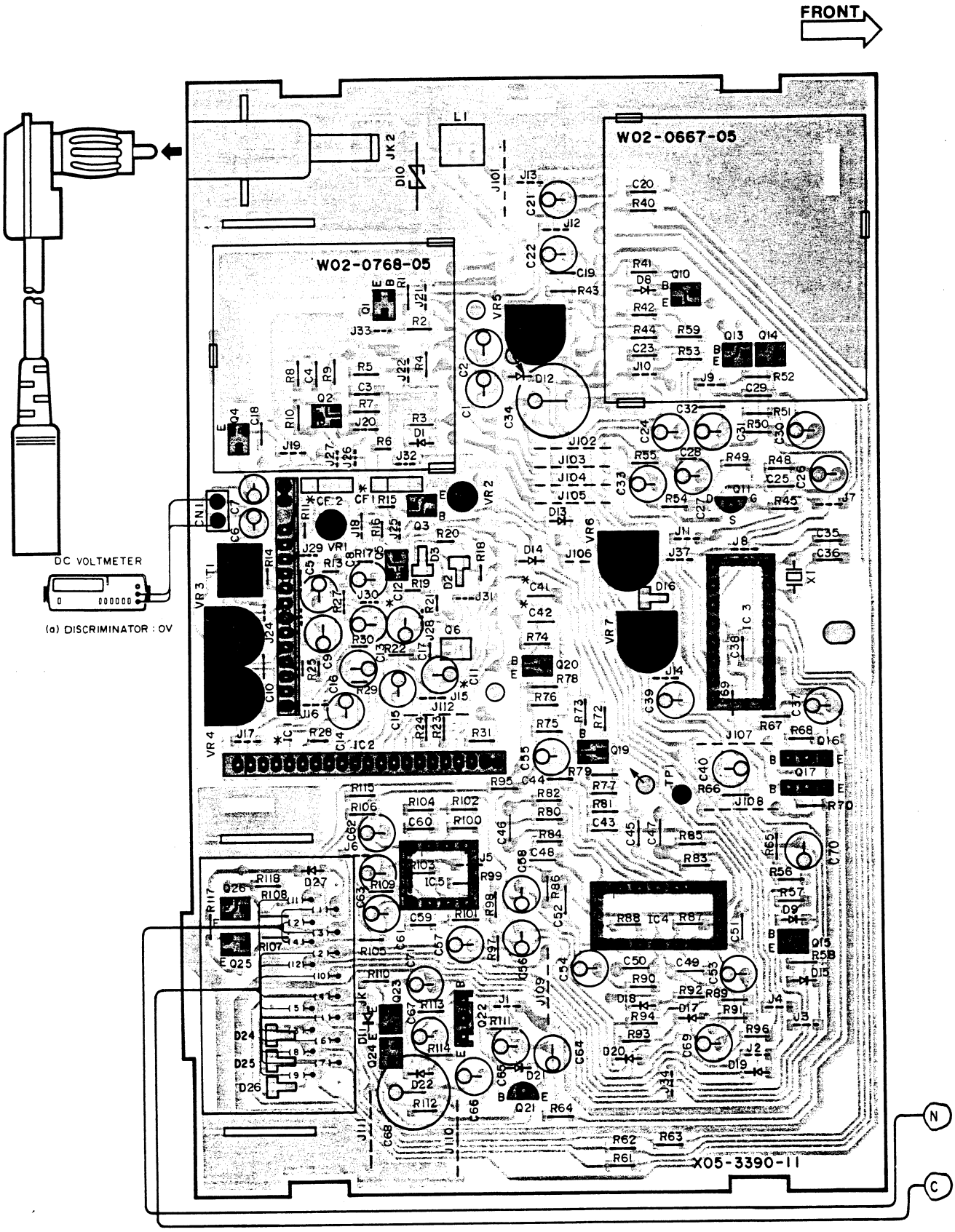


Refer to the schematic diagram for the values of resistors and capacitors.

PC BOARD (TUNER)

(Foil side view)

TUNER UNIT (X05-3390-11)



Refer to the schematic diagram for the values of resistors and capacitors.

RF AMP UNIT(X13-5690-00)(A/3) IC1 : CXA1045Q

REEL SERVO UNIT (X13-5690-00)(B/3)

IC8 : μPC358G2
IC11,12 : μPD4053BG
IC13 : BA6303F
Q10,11 : 2SC2411K
Q12 : DTC124EK

DIO,11 : DLS1585 or RLS-73
DI2 : DAN202K
DI3 : DA204K

REEL CAPSTAN SERVO (X29-1830-00)(C/3)

MECHA SENSOR (X13-5690-00)(C/3)

MECHA(X92-1180-00)

IC2 : μPC393G2
IC3 : μPD82C43G
IC4,5 : μPC358G2
IC6 : M54649L

Q1 : 2SC2412K
Q2 : 2SC2411K
Q3,4,6 : DTC124EK
Q5 : 2SB1188

μPD82C43G

DTC124EK
2SA1037K
2SC2411K
2SC2412K

2SB1188

FMA1
FMW2

2SB891F11

μPD4052BG

NJM2904M
μPC358G2
μPC393G2

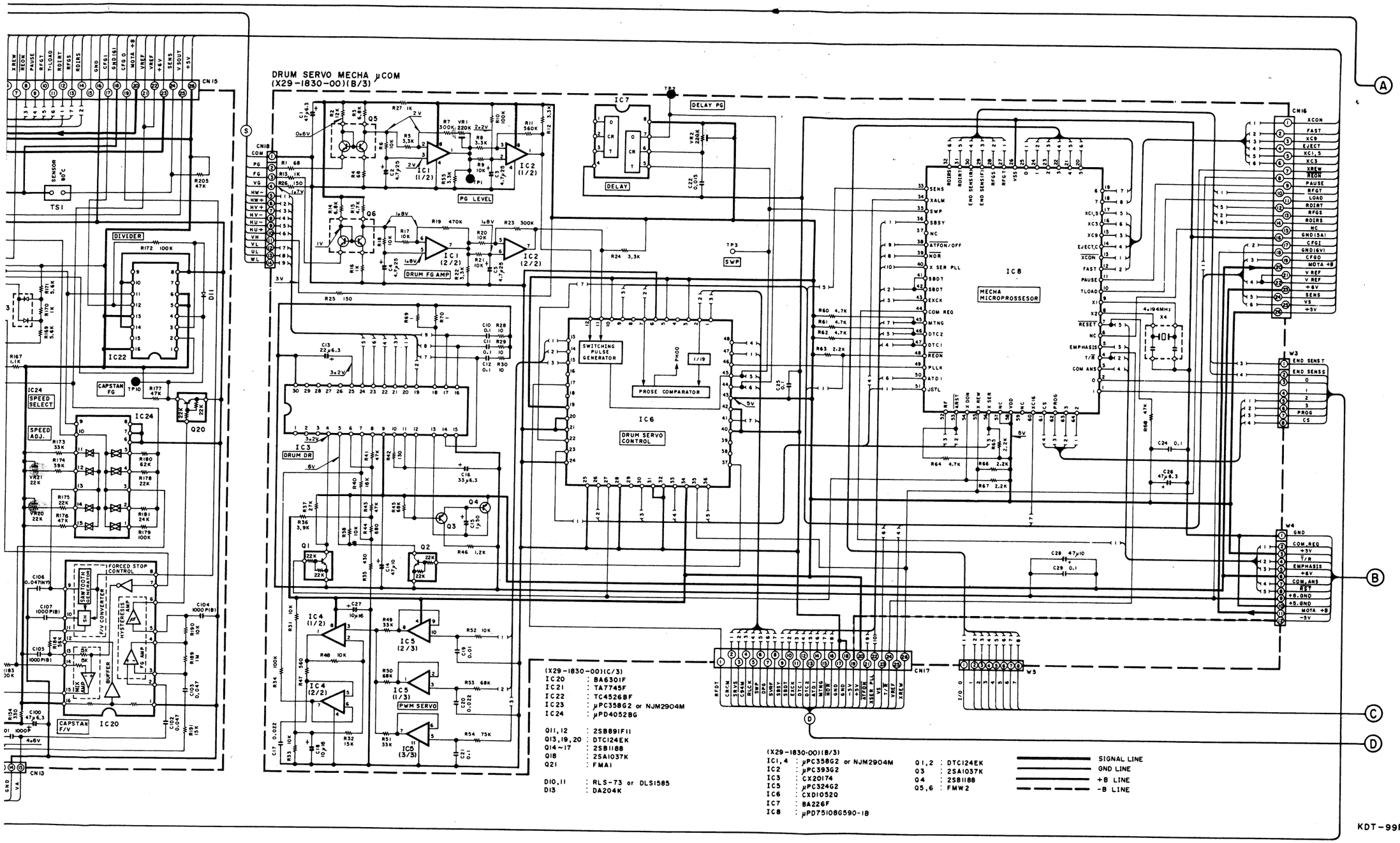
TA7745F
TC4526BF

BA6301F

BA6303F
μPD4053BG

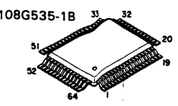
μPC324G2

μPD75108G535-1B

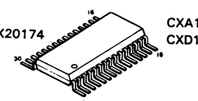


KDT-99R (K) (1/3)

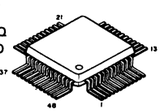
PD75108G535-1B



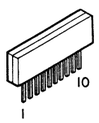
CX20174



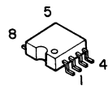
CXA1045Q
CXD10520



M54649L



BA226F



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KDT-99/99R

KENWOOD

RAM/ECC ATF (X29-1830-00)(A/3)

D/A CONV.(X09-2550-XX)(A/2)

IC10	: AN6556S	D1	: FC52M
IC12	: MB84256-12LLPF	D2,4	: DA204K
	or μPD43256MF-12L	D3	: 1SS176
	or CXK58256MF-12L	D5	: RLS-73 or DLS1585
IC13	: CXD1009Q		
IC14	: CXD1008Q	Q7	: 2SK160A(K25)
IC15	: NJM072M	Q9	: DTC124EX
IC16	: μPD4053BG		
IC17	: μPD4066BG		
IC18	: CXA1046M		
IC19	: μPC324G2		

DTC124EK

2SK160A

PCM56P

AN6556S
NJM072M

μPD4053BG

TA79L005P

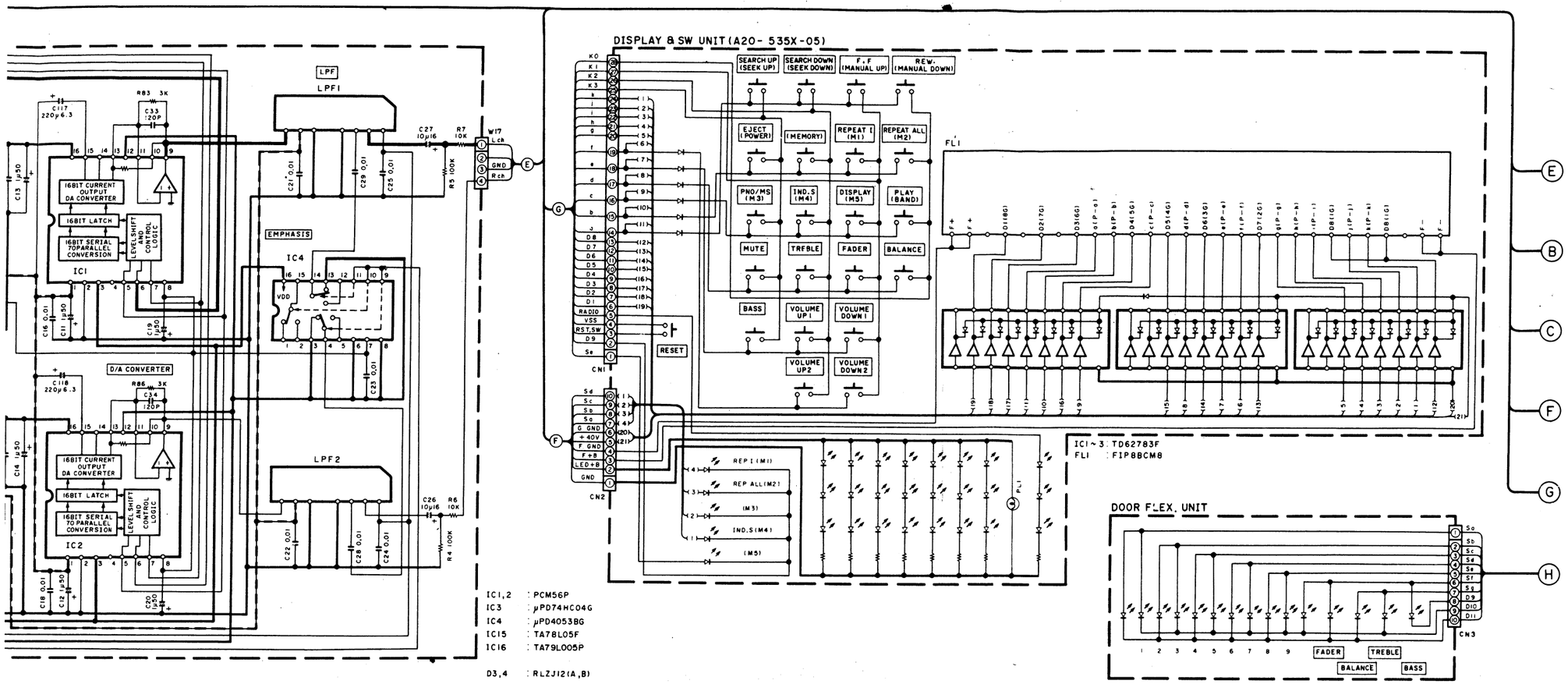
TA78L05F

μPD74HC04G

μPC324G2
μPD4066BG

TD62781F

CXD1



IC1,2 : PCM56P
IC3 : µPD74HC04G
IC4 : µPD4053BG
IC15 : TA78L05F
IC16 : TA79L005P

D3,4 : RLZJ12(A,B)

IC1~3: TD62783F
FL1 : FIP88CM8

SIGNAL LINE
GND LINE
+B LINE
−B LINE

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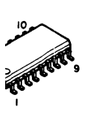
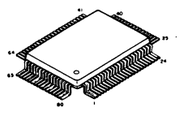
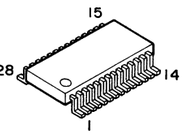
KDT-99R(K)(2/3)



CXD1008Q
CXD1009Q



CXA1046M
CXK58256MF-12L
MB84256-12LLPF
µPD43256MF-12L



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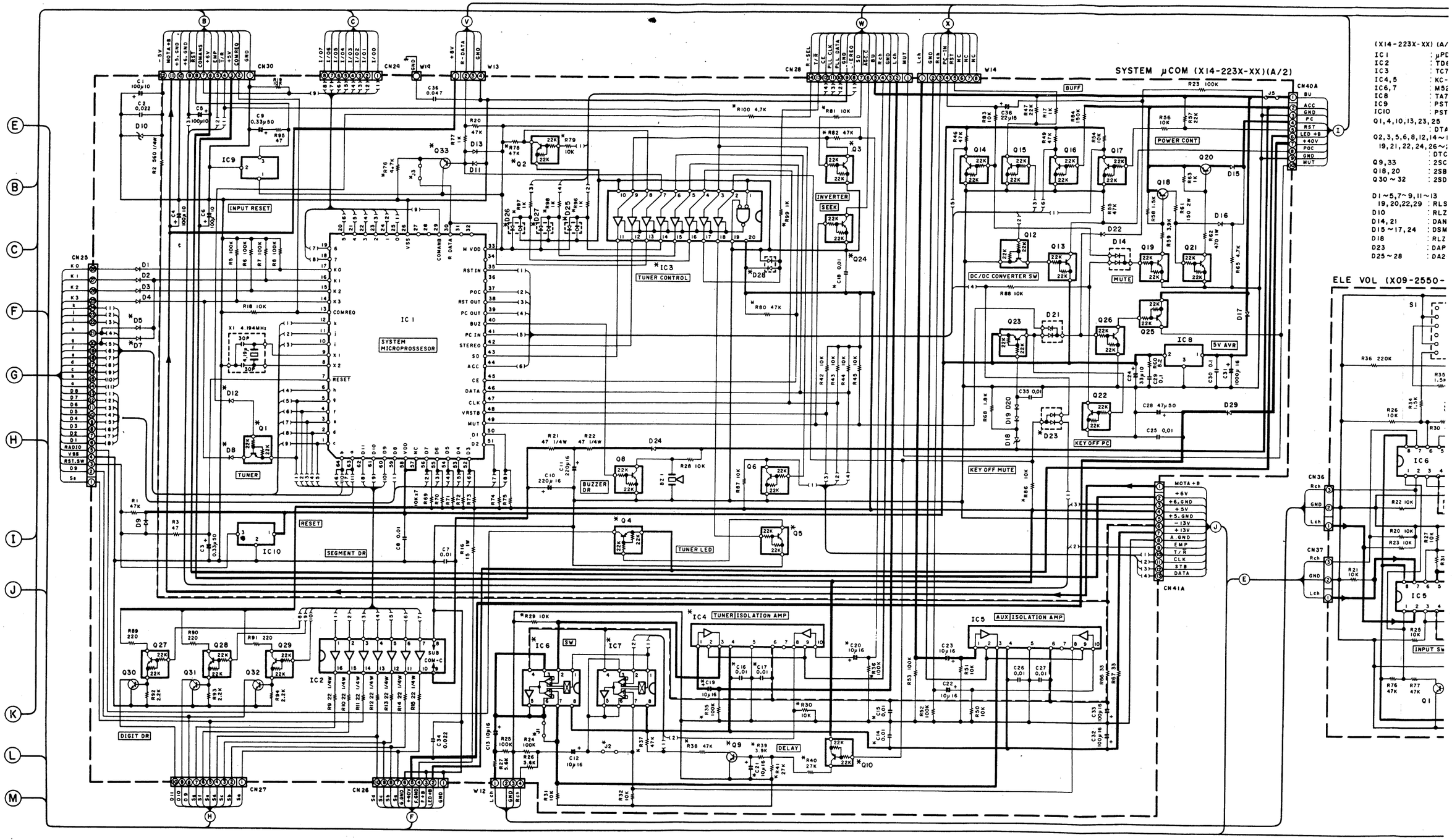
KDT-99/99R
KENWOOD



2SA1020
2SC2655

DTA124EK
DTC124EK
2SC2412K
2SD1757K

2SB1188
2SD1664

2SC3540

MB3759

M5201FP
NJM2041M
NJM4560M

PST520C

PST520F
TA78DS05P

TD62505F

μPD75108G574-1B

TC9188F

KC

(X14-223X-XX) (A/2)

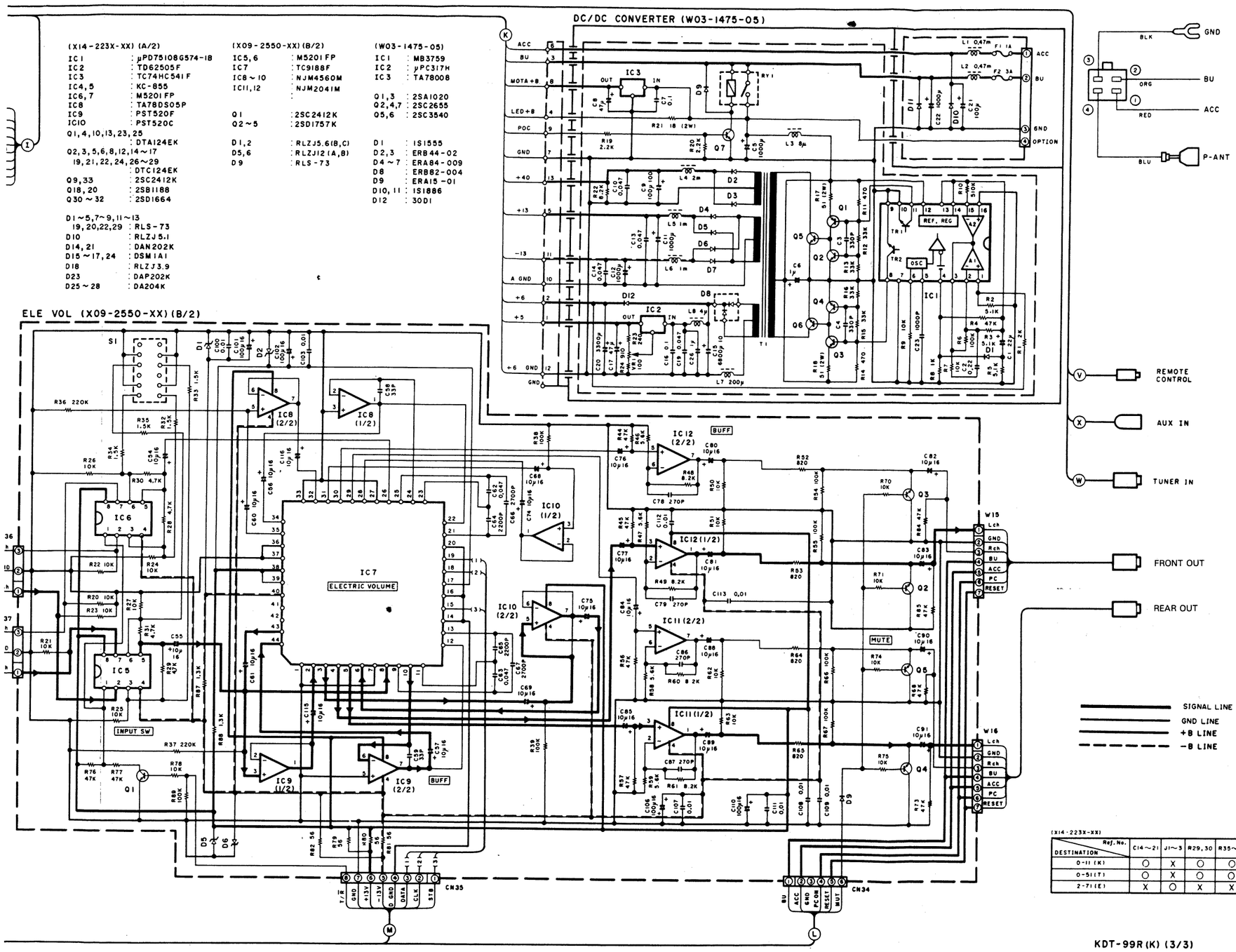
IC1	: μPD75108G574-18
IC2	: TD62505F
IC3	: TC74HC541F
IC4,5	: KC-855
IC6,7	: M5201FP
IC8	: TA78DS05P
IC9	: PST52OF
IC10	: PST520C
Q1,4,10,13,23,25	: DTA124EK
Q2,3,5,6,8,12,14~17 19,21,22,24,26~29	: DTC124EK
Q9,33	: 2SC2412K
Q18,20	: 2SB1188
Q30~32	: 2SD1664
D1~5,7~9,11~13 19,20,22,29	: RLS-73
D10	: RLZJ5.1
D14,21	: DAN202K
D15~17,24	: DSM1A1
D18	: RLZJ3.9
D23	: DAP202K
D25~28	: DA204K

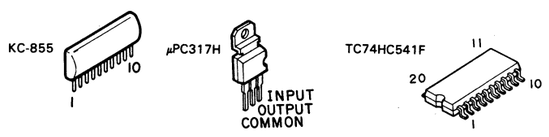
(X09-2550-XX) (B/2)

IC5,6	: M5201FP
IC7	: TC9188F
IC8~10	: NJM4560M
IC11,12	: NJM2041M
Q1	: 2SC2412K
Q2~5	: 2SD1757K
D1,2	: RLZJ5.6(B,C)
D5,6	: RLZJ12(A,B)
D9	: RLS-73

(W03-1475-05)

IC1	: MB3759
IC2	: μPC317H
IC3	: TA78008
Q1,3	: 2SA1020
Q2,4,7	: 2SC2655
Q5,6	: 2SC3540
D1	: 1S1555
D2,3	: ERB44-02
D4~7	: ERA84-009
D8	: ERB82-004
D9	: ERA15-01
D10,11	: 1S1886
D12	: 30D1





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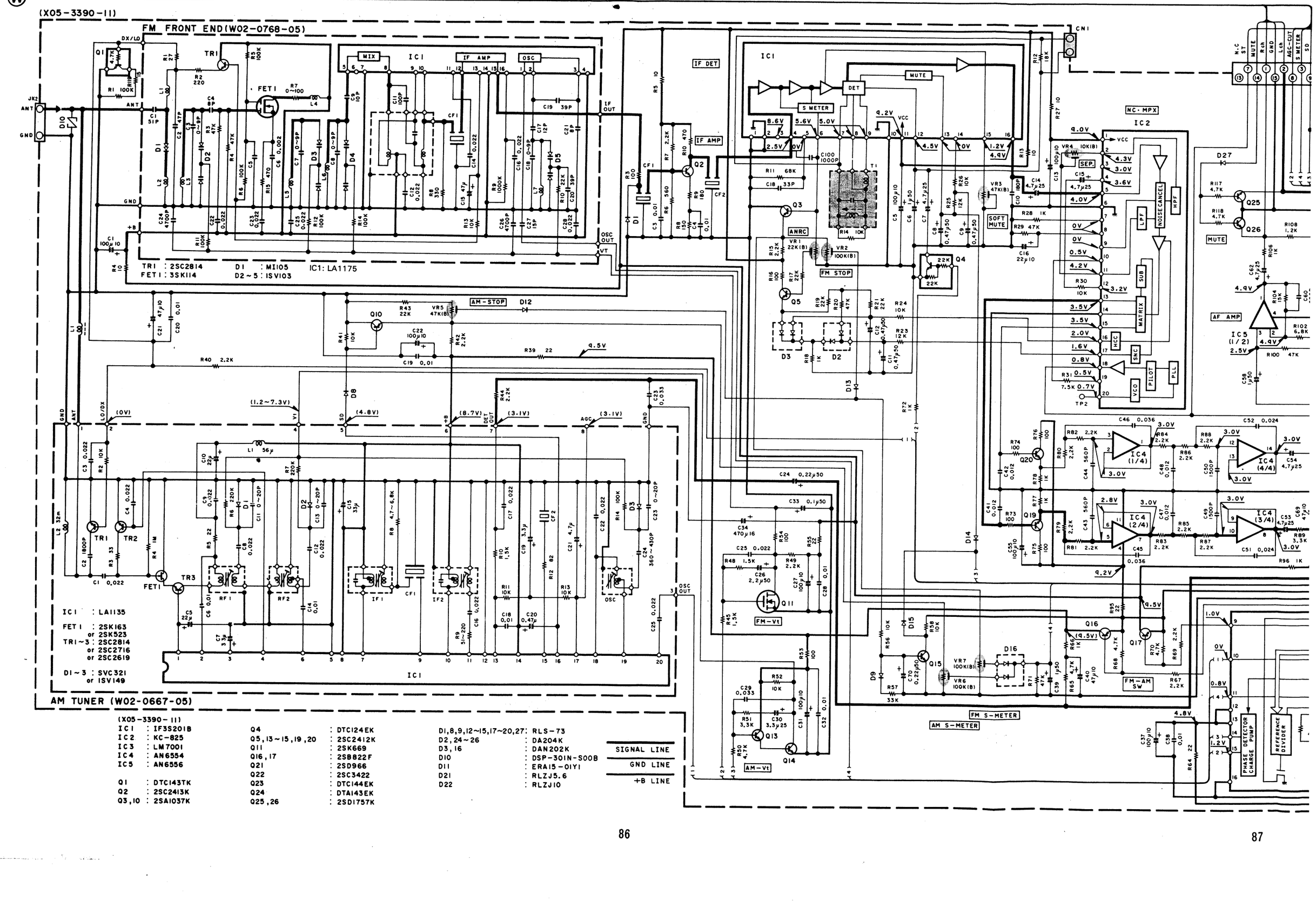
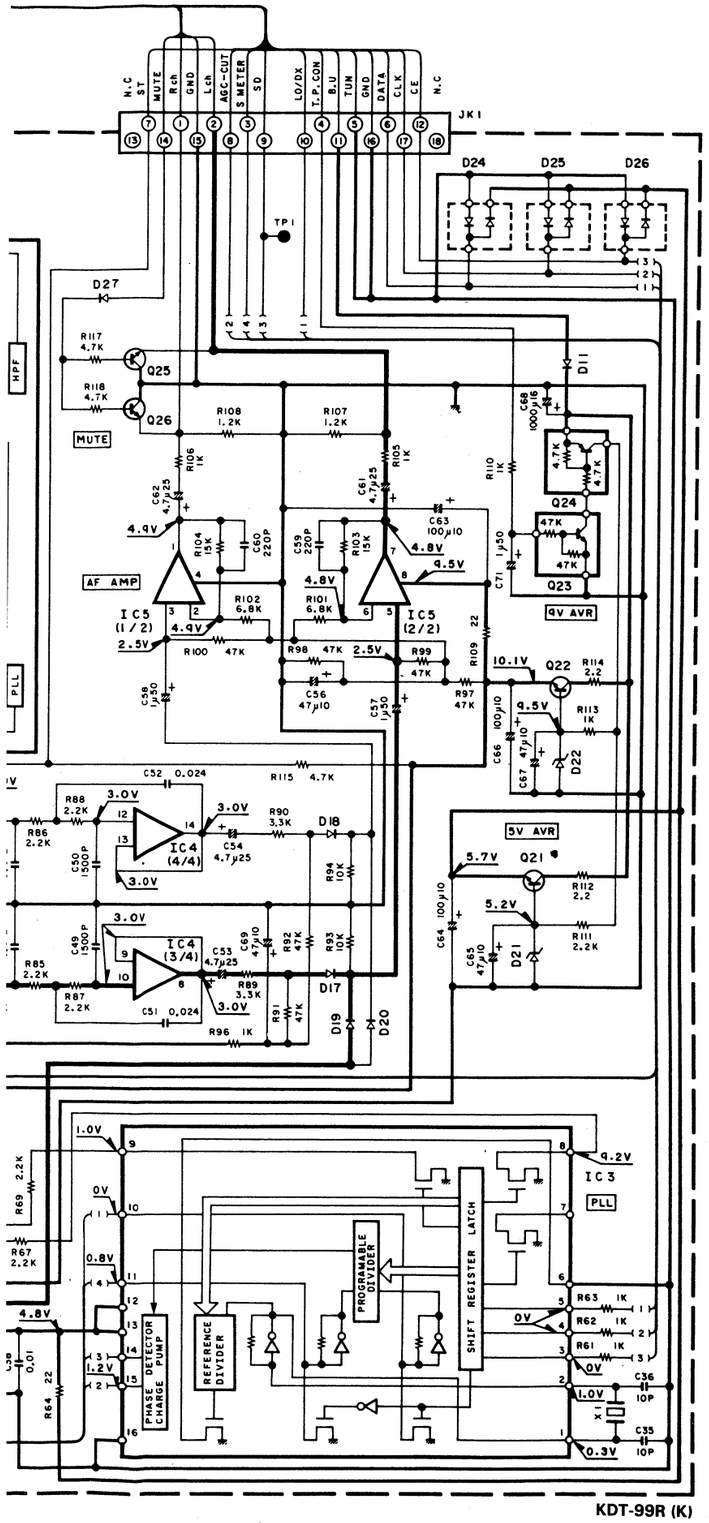
(X14-223X-XX)

DESTINATION \ Ref. No.	C14~21	J1~3	R29,30	R35~41	R76	R78~82	R86	R96~100	D5	D7	D8	D12	D23	D25~28	IC3	IC4	IC6,7	Q1~5	Q9,10	Q24	Q33
0-11 (K)	○	X	○	○	X	○	○	○	○	X	○	○	○	○	○	○	○	○	○	○	X
0-51 (T)	○	X	○	○	X	○	○	○	X	○	○	○	○	○	○	○	○	○	○	○	X
2-71 (E)	X	○	X	X	○	X	X	X	X	○	X	X	X	X	X	X	X	X	X	X	○

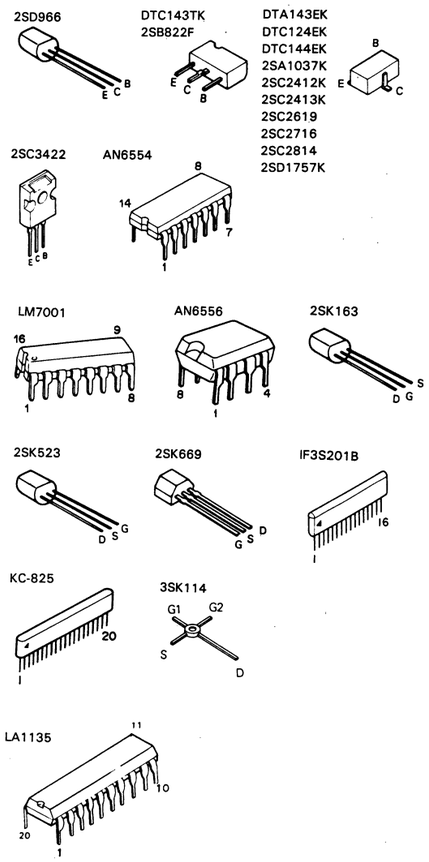
○ : USED
X : NOT USED

KDT-99R(K) (3/3)


(X05-3390-11)
FM FRONT END(W02-0768-05)
TR1 : 2SC2814
FET1 : 3SK114
D1 : MI105
D2~5 : ISV103
IC1: LA1175
IC1 : LA1135
FET1 : 2SK163 or 2SK523
TR1~3 : 2SC2814 or 2SC2716 or 2SC2619
D1~3 : SVC321 or ISV149
AM TUNER (W02-0667-05)
(X05-3390-11)
IC1 : IF3S201B
IC2 : KC-825
IC3 : LM7001
IC4 : AN6554
IC5 : AN6556
Q1 : DTC143TK
Q2 : 2SC2413K
Q3,10 : 2SA1037K
Q4 : DTC124EK
Q5,13~15,19,20 : 2SC2412K
Q11 : 2SK669
Q16,17 : 2SB822F
Q21 : 2SD966
Q22 : 2SC3422
Q23 : DTC144EK
Q24 : DTA143EK
Q25,26 : 2SD1757K
D1,8,9,12~15,17~20,27 : RLS-73
D2,24~26 : DA204K
D3,16 : DAN202K
D10 : DSP-301N-S00B
D11 : ERA15-01Y1
D21 : RLZJ5.6
D22 : RLZJ10
SIGNAL LINE
GND LINE
+B LINE



KDT-99R (K)



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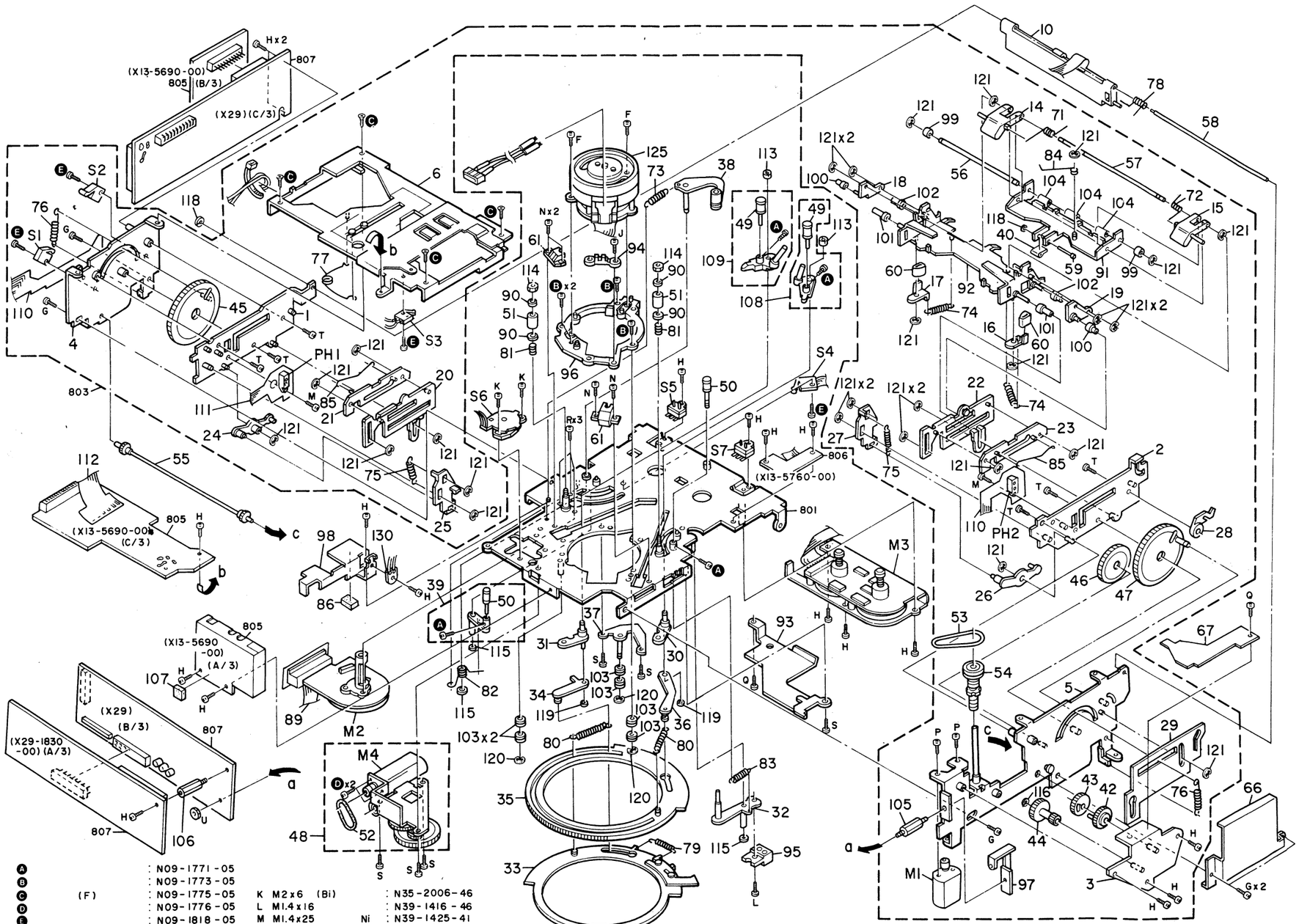
KDT-99/99R

KENWOOD

EXPLODED VIEW (MECHANISM)



A	: N09-1771-05								
B	: N09-1773-05								
C (F)	: N09-1775-05	K M2x6 (Bi)	: N35-2006-46			S M2x25	: N39-2025-46		
D	: N09-1776-05	L M1.4x16	: N39-1416-46			T M2x30	BLK : N39-2030-45		
E	: N09-1818-05	M M1.4x25	Ni : N39-1425-41			U M20	: N10-2020-46		
F M2x3	: N30-2003-46	N M1.4x30	: N39-1430-46						
G M2.6x3	: N30-2603-46	P M1.7x22	BLK : N39-1722-45						
H M2x3 (Bi)	: N35-2003-46	Q M1.7x22	: N39-1722-46						
J M2x5 (Bi)	: N35-2005-46	R M1.7x30	: N39-1730-46						

Parts with the exploded numbers larger than 700 are not supplied.

EXPLODED VIEW (UNIT)

F ø2.6x5 (Bi-Tap) : N09-1345-05
G ø2.6x5 (Bi-Tap) BLK : N09-1485-05
H M1.7x4 : N09-1890-05
J M3x8 : N09-1952-08
Z M1.7x6 : N09-1949-05
A M3x5 (Bi) : N35-3005-46
B ø2.6x8 (F-Tap) : N85-2608-46
C ø2.6x6 (Bi-Tap) : N89-2606-46
V M2.6x5 (Bi) BLK : N35-2605-45

PL1

SEEK: S4 LED1 | S4 LED2

MANUAL: S5 LED3 S5 | S6 LED4 S6

PLAY / BAND: S10 LED5 | LED6 S10 | LED7 ATT S11 | LED8

FADER S9A | BASS S9B | TREBLE S9C | BALANCE S9D

LED9: S7-1 S7-2 S7-1 | S8-1 LED10 S8-2 S8-1

C/M: S13 | ONE 1 S14A | ALL 2 S14B | P.NO/MS 3 S14C | IND.S 4 S14D | DISPLAY 5 S14E | RESET S15

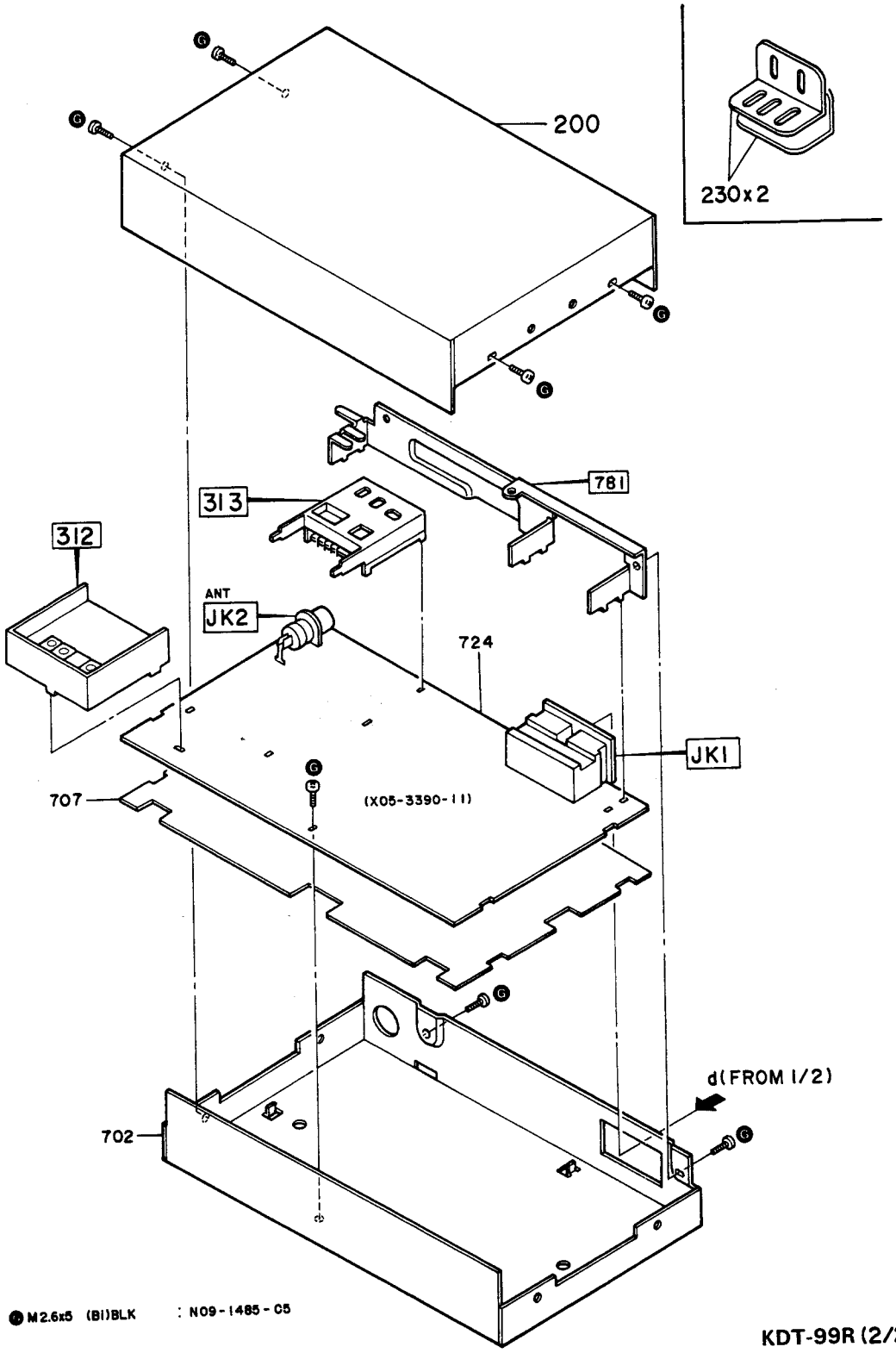
LED15 LED16 LED17 LED18 LED19

LED11 S15 POWER
LED12 FM1
LED13 FM2
LED14 AM1
AM2

REPEAT: LED20 LED21 LED22 LED23 LED24

Parts with the exploded numbers larger than 700 are not supplied.

EXPLODED VIEW (TUNER)



KDT-99R (2/2)

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PARTS LIST

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
			KDT-99/99R			
200	1J		A01-1571-03	METALLIC CABINET	KT	
201	1E	*	A01-1596-02	METALLIC CABINET		
202	2E	*	A20-5357-05	PANEL ASSY	KT	
202	2F	*	A20-5359-05	PANEL ASSY	E	
203	3G	*	A46-0263-04	REAR COVER	E	
205	1F	*	B01-0373-03	PANEL ESCUTCHEON		
-			B46-0100-10	WARRANTY CARD		
-		*	B50-8563-00	INSTRUCTION MANUAL(ENG,FRE)	K	
-		*	B50-8564-00	INSTRUCTION MANUAL(E,F,D,I)	T	
-		*	B50-8566-00	INSTRUCTION MANUAL(GERMAN)	E	
-		*	B58-0851-04	CAUTION CARD		
206	1F		E30-0893-05	GROUND WIRE		
207	1H	*	E30-2262-05	CORD WITH PLUG (TUNER)	KT	
208	1F	*	E30-2268-15	DC CORD		
		*	F20-0961-04	INSULATING SHEET		
213	1H		F29-0046-15	INSULATING COVER		
214	1H		F29-0088-05	INSULATING COVER	KT	
219	1E	*	G11-1232-04	CUSHION (CASE)		
223	1F		H30-0051-05	MAGIC TAPE		
-		*	H01-7671-04	ITEM CARTON CASE	KT	
-		*	H01-7673-04	ITEM CARTON CASE	E	
-		*	H10-3493-02	POLYSTYRENE FOAMED FIXTURE		
-		*	H10-3494-02	POLYSTYRENE FOAMED FIXTURE		
-			H12-1176-04	PACKING FIXTURE(TUNER)	KT	
-			H25-0103-04	PROTECTION BAG (125X250X0.07)		
-			H25-0112-04	PROTECTION BAG (180X250X0.05)		
-			H25-0181-04	PROTECTION BAG (150X260X0.05)		
-			H25-0268-04	PROTECTION BAG		
225	1F		J21-3645-04	MOUNTING HARDWARE		
226	1F		J21-3644-22	MOUNTING HARDWARE ASSY		
227	1G	*	J30-0236-04	SPACER		
228	2G	*	J32-0318-04	HEXAGON BOSS		
229	1F		J54-0068-03	STAY		
230	1H		J21-3801-04	MOUNTING HARDWARE	KT	
232	1F		N99-0212-25	SCREW SET	KT	
233	1F		N99-0248-15	SCREW SET		
234	1F	*	N99-0257-05	SCREW SET		
F	1F,3G		N09-1345-05	TAPTITE SCREW (Ø2.6X5)		
G	1E		N09-1485-05	TAPTITE SCREW (ØM2.6X5)		
FL1	2G		F1P8BCM8	FLUORESCENT INDICATOR TUBE		
237	1F		W03-1440-05	REMOTE CONTROLLER		
238	1H	*	W03-1475-05	CONVERTER		
242	1G	*	X92-1180-00	MECHANISM ASSY		

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PANEL ASS'Y (KT: A20-5357-05, E: A20-5359-05)						
246	3E	*	B10-0936-08	FRONT GLASS		L
246	3E	*	B10-0937-08	FRONT GLASS		D
250	3E	*	K27-1864-08	KNOB(BUTTON) FF		L
250	3E	*	K27-1865-08	KNOB(BUTTON) FF		D
251	3E	*	K27-1867-08	KNOB(BUTTON) REW		L
251	3E	*	K27-1867-08	KNOB(BUTTON) REW		D
252	3E	*	K27-1868-08	KNOB(BUTTON) PLAY		L
252	3E	*	K27-1869-08	KNOB(BUTTON) PLAY/BAND		D
253	3E	*	K27-1870-08	KNOB(BUTTON) ATT		
254	2F	*	K27-1871-08	KNOB(BUTTON) FAD,BASS,TRE,BAL		
255	3E	*	K27-1872-08	KNOB(BUTTON) UP		
256	3E	*	K27-1873-08	KNOB(BUTTON) DOWN		
257	2F	*	K27-1874-08	KNOB(BUTTON) C/M		
258	2F	*	K27-1875-08	KNOB(BUTTON) CH1		
259	3F	*	K27-1876-08	KNOB(BUTTON) CH2		
260	3F	*	K27-1877-08	KNOB(BUTTON) CH3		
261	3F	*	K27-1878-08	KNOB(BUTTON) CH4		
262	3F	*	K27-1879-08	KNOB(BUTTON) CH5		
263	3F	*	K27-1880-08	KNOB(BUTTON) RESET		
264	2F	*	K27-1881-08	KNOB(BUTTON) EJECT		
265	3E	*	K27-1882-08	KNOB(BUTTON) SERCH		L
265	3E	*	K27-1883-08	KNOB(BUTTON) SEEK		D
H	2G		N09-1890-05	SCREW (M1.7X4)		
Z	2F,2G	*	N09-1949-05	SCREW (M1.7X6)		
CONVERTER (W03-1475-05)						
269	3G	*	B11-0182-08	FILTER		
LED1-24	2E,2F	*	B30-1205-05	LED		
PL1	1E	*	B30-1217-05	LAMP		
C1 -3		*	CK73DB1H104K	CHIP C 0.10UF K		
273	2G	*	J25-5838-08	PRINTED WIRING BOARD		
274	2F	*	J25-5839-08	PRINTED WIRING BOARD		
275	2G	*	J25-5840-08	PRINTED WIRING BOARD		
R1		*	RK73FB2A161J	CHIP R 160 J 1/10W		
R2 ,3		*	RK73FB2A301J	CHIP R 300 J 1/10W		
R4 -7		*	RK73FB2A161J	CHIP R 160 J 1/10W		
D1 -6			DAN202K	DIODE		
FL1	2G	*	FIP8BCM8	FLOURESCENT INDICATOR TUBE		
IC1 -3		*	TD62781F	IC		
-		*	C91-0984-08	CERAMIC 3300PF 50WV		
C1		*	C90-1624-08	ELECTRO 22UF 16WV		
C2		*	CS15E1VR22M	TANTAL 0.22UF 35WV		
C3 ,4		*	CQ92M1H331K	MYLAR 330PF K		
C5 ,6			C90-1403-05	ELECTRO 1000UF 16WV		
C7		*	CS15E1V105M	TANTAL 1000UF 35WV		
C8		*	C90-1625-08	ELECTRO 47UF 16WV		
C9		*	C90-1626-08	ELECTRO 100UF 100WV		
C10			CK45F1H473Z	CERAMIC 0.047UF Z		
C11 ,12			C90-1403-05	ELECTRO 1000UF 16WV		
C13 ,14			CK45F1H473Z	CERAMIC 0.047UF Z		
C15		*	C91-0981-08	CONDENSER ASSY		
C16			CQ92M1H104J	MYLAR 0.10UF J		
C17		*	C90-1625-08	ELECTRO 47UF 16WV		
C19			CK45F1H473Z	CERAMIC 0.047UF Z		

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D: A20-5357-05 (KDT-99R) **KT: KDT-99R**
L: A20-5359-05 (KDT-99) **E: KDT-99**

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C20		*	C90-1627-08	ELECTRO 470UF 16WV		
C21		*	C90-1628-08	ELECTRO 100UF 16WV		
C22			C90-1403-05	ELECTRO 1000UF 16WV		
C23		*	C91-0983-08	FILM 1000PF 50WV		
C24		*	C90-1629-08	ELECTRO 3300UF 6.3WV		
C25			CK45F1H473Z	CERAMIC 0.047UF Z		
C26		*	CS15E1V105M	TANTAL 0.047UF 35WV		
CN2	2H	*	C91-0982-08	CONDENSER ASSY (13P CONNECTOR)		
CN1	3H	*	E08-0412-08	RECTANGULAR RECEPTACLE		
304	2H	*	F20-0943-08	INSULATING BOARD		
305	2H	*	F29-0095-08	INSULATOR		
F1	2H		F04-1021-05	FUSE (1A)		
F2	2H		F06-3026-05	FUSE (3A)		
309	3H	*	J13-0067-05	FUSE HOLDER		
L1 ,2		*	L33-0332-08	CHOKE COIL		
L3		*	L33-0333-08	CHOKE COIL		
L4		*	L33-0334-08	CHOKE COIL		
L5 ,6		*	L33-0335-08	CHOKE COIL		
L7		*	L33-0336-08	CHOKE COIL		
L8		*	L33-0337-08	CHOKE COIL		
T1		*	L19-0057-08	BALUN TRANSFORMER		
J	3H	*	N09-1952-08	SCREW (M3X8)		
R1		*	RN14BK2C202G	RN 2.0K G 1/6W		
R2		*	RN14BK2C512G	RN 5.1K G 1/6W		
R9		*	RN14BK2C103G	RN 10K G 1/6W		
R17 ,18		*	RS14KB3D510J	FL-PROOF RS 10K J 2W		
R21		*	RS14KB3D180J	FL-PROOF RS 18 J 2W		
R22		*	RD14BB2H471J	RD 470 J 1/2W		
R23		*	RN14BK2C241G	RN 240 G 1/6W		
R24		*	RN14BK2C911G	RN 910 G 1/6W		
VR1		*	R12-0114-08	TRIMMING POT. (100B)		
RY1		*	S51-1048-08	RELAY		
D1			1S1555	DIODE		
D2 ,3		*	ERB44-02	DIODE		
D4 -7		*	ERA84-009	DIODE		
D8		*	ERB82-004	DIODE		
D9			ERA15-01	DIODE		
D10 ,11		*	1S1886	DIODE		
D12			30D1	DIODE		
D13		*	1Z36	ZENER DIODE		
IC1		*	MB3759	IC(SWITCHING REGULATOR CONTROL		
IC2			UPC317H	IC(VOLTAGE REGULATOR)		
IC3			UPC7808H	IC(VOLTAGE REGULATOR/ +8V)		
Q1			2SA1020	TRANSISTOR		
Q2			2SC2655	TRANSISTOR		
Q3			2SA1020	TRANSISTOR		
Q4			2SC2655	TRANSISTOR		
Q5 ,6		*	2SC3540	TRANSISTOR		
Q7			2SC2655	TRANSISTOR		

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TUNER UNIT (X05-3390-11: KDT-99R only)						
C1			CE04DW1A101M	ELECTRO 100UF 10WV		
C3 ,4			CK41DY1C103M	CYLND CHIP C 0.010UF M		
C5			CE04DW1A101M	ELECTRO 100UF 10WV		
C6			C90-0824-05	ELECTRO 1UF 50WV		
C7			C90-0482-05	ELECTRO 4.7UF 25WV		
C8			CE04DW1HR47M	ELECTRO 0.47UF 50WV		
C9			CE04DW1HR47M	ELECTRO 0.47UF 50WV		
C10			CK41DB1H181K	CYLND CHIP C 180PF K		
C11			CE04DW1HR47M	ELECTRO 0.47UF 50WV		
C12			CE04DW1C100M	ELECTRO 10UF 16WV	T	
C12			CE04DW1HR47M	ELECTRO 0.47UF 50WV	K	
C13			CE04DW1A101M	ELECTRO 100UF 10WV		
C14 ,15			CE04DW1E4R7M	ELECTRO 4.7UF 25WV		
C16			CE04DW1A220M	ELECTRO 22UF 10WV		
C17			CK73FB1H562K	CHIP C 5600PF K	T	
C18			CC41DSL1H330J	CYLND CHIP C 33PF J		
C19 ,20			CK41DY1C103M	CYLND CHIP C 0.010UF M		
C21			CE04DW1A470M	ELECTRO 47UF 10WV		
C22			CE04DW1A101M	ELECTRO 100UF 10WV		
C23			CK73EB1H333K	CHIP C 0.033UF K		
C24		*	CE04DW1HR22M	ELECTRO 0.22UF 50WV		
C25			CK41DF1E223Z	CYLND CHIP C 0.022UF Z		
C26			CE04DW1H2R2M	ELECTRO 2.2UF 50WV		
C27			CE04DW1A101M	ELECTRO 100UF 10WV		
C28			CK73FB1H103K	CHIP C 0.010UF K		
C29			CK73EB1H333K	CHIP C 0.033UF K		
C30			CE04DW1E3R3M	ELECTRO 3.3UF 25WV		
C31			CE04DW1A101M	ELECTRO 100UF 10WV		
C32			CK41DY1C103M	CYLND CHIP C 0.010UF M		
C33		*	CE04DW1H0R1M	ELECTRO 0.1UF 50WV		
C34			CE04DW1C471M	ELECTRO 470UF 16WV		
C35 ,36			CC41DSL1H100J	CYLND CHIP C 10PF J		
C37			CE04DW1A101M	ELECTRO 100UF 10WV		
C38			CK41DY1C103M	CYLND CHIP C 0.010UF M		
C39			CE04DW1H010M	ELECTRO 1.0UF 50WV		
C40			CE04DW1A470M	ELECTRO 47UF 10WV		
C41 ,42			CF92V1H123J	MF 0.012UF J	K	
C41 ,42		*	CF92V1H562J	MF 5600PF J	T	
C43 ,44			CK41DB1H561K	CYLND CHIP C 560PF K		
C45 ,46			CF92V1H363J	MF 0.036UF J		
C47 ,48			CF92V1H123J	MF 0.012UF J		
C49 ,50			CF92V1H152J	MF 1500PF J		
C51 ,52			CF92V1H243J	MF 0.024UF J		
C53 ,54			CE04DW1E4R7M	ELECTRO 4.7UF 25WV		
C55			CE04DW1A101M	ELECTRO 100UF 10WV		
C56			CE04DW1A470M	ELECTRO 47UF 10WV		
C57 ,58			CE04DW1H010M	ELECTRO 1.0UF 50WV		
C59 ,60			CK41DB1H221K	CYLND CHIP C 220PF K		
C61 ,62			CE04DW1E4R7M	ELECTRO 4.7UF 25WV		
C63 ,64			CE04DW1A101M	ELECTRO 100UF 10WV		
C65			CE04DW1A470M	ELECTRO 47UF 10WV		
C66			CE04DW1A101M	ELECTRO 100UF 10WV		
C67			CE04DW1A470M	ELECTRO 47UF 10WV		

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C68			CE04DW1C102M	ELECTRO 1000UF 16WV		
C69			CE04DW1A470M	ELECTRO 47UF 10WV		
C70		*	CE04DW1HR22M	ELECTRO 0.22UF 50WV		
C71			CE04DW1H010M	ELECTRO 1.0UF 50WV		
C100			CK73FB1H102K	CHIP C 1000PF K		
JK1	2J	*	E08-1803-05	RECTANGULAR RECEPTACLE		
JK2	2I	*	E04-0018-05	RF COAXIAL CABLE RECEPTACLE		
CF1 ,2			L72-0523-05	CERAMIC FILTER	K	
CF1 ,2			L72-0524-05	CERAMIC FILTER	T	
L1			L39-0129-05	TRAP COIL		
T1			L30-0462-15	FM IFT		
X1			L77-1110-05	CRYSTAL RESONATOR(7.2MHZ)		
J1 -22			R92-0338-05	CLYND CHIP R 0 OHM		
J23 -33			R92-0670-05	CHIP R 0 OHM		
J34			R92-0338-05	CLYND CHIP R 0 OHM	T	
J34 ,35			R92-0338-05	CLYND CHIP R 0 OHM	K	
J37			R92-0338-05	CLYND CHIP R 0 OHM		
R1			RD41DB2B104J	CYLND CHIP R 100K J 1/8W		
R3			RD41DB2B101J	CYLND CHIP R 100 J 1/8W		
R4 ,5			RD41DB2B100J	CYLND CHIP R 10 J 1/8W		
R6			RK73FB2A561J	CHIP R 560 J 1/10W		
R7			RD41DB2B222J	CYLND CHIP R 2.2K J 1/8W		
R8			RD41DB2B151J	CYLND CHIP R 150 J 1/8W		
R9			RD41DB2B181J	CYLND CHIP R 180 J 1/8W		
R10			RD41DB2B331J	CYLND CHIP R 330 J 1/8W	T	
R10			RD41DB2B471J	CYLND CHIP R 470 J 1/8W	K	
R11			RK73FB2A683J	CHIP R 68K J 1/10W		
R12			RK73FB2A183J	CHIP R 18K J 1/10W		
R13			RK73FB2A100J	CHIP R 10 J 1/10W		
R14			RK73FB2A103J	CHIP R 10K J 1/10W		
R15			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R16			RK73FB2A101J	CHIP R 100 J 1/10W		
R17			RK73FB2A223J	CHIP R 22K J 1/10W		
R18			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R19			RK73FB2A103J	CHIP R 10K J 1/10W	T	
R19			RK73FB2A223J	CHIP R 22K J 1/10W	K	
R20			RK73FB2A473J	CHIP R 47K J 1/10W		
R21			RK73FB2A223J	CHIP R 22K J 1/10W	K	
R21			RK73FB2A472J	CHIP R 4.7K J 1/10W	T	
R22 ,23			RD41DB2B473J	CYLND CHIP R 47K J 1/8W	T	
R23			RD41DB2B123J	CYLND CHIP R 12K J 1/8W	K	
R24			RD41DB2B100J	CYLND CHIP R 10 J 1/8W	T	
R24			RD41DB2B103J	CYLND CHIP R 10K J 1/8W	K	
R25			RK73FB2A123J	CHIP R 12K J 1/10W		
R26			RK73FB2A103J	CHIP R 10K J 1/10W		
R27			RD41DB2B100J	CYLND CHIP R 10 J 1/8W		
R28			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R29			RK73FB2A473J	CHIP R 47K J 1/10W		
R30			RK73FB2A103J	CHIP R 10K J 1/10W		
R31			RD41DB2B752J	CYLND CHIP R 7.5K J 1/8W		
R32		*	RD41DB2B150J	CYLND CHIP R 15 J 1/8W	T	
R39			RD41DB2B220J	CYLND CHIP R 22 J 1/8W		
R40			RD41DB2B222J	CYLND CHIP R 2.2K J 1/8W		
R41			RD41DB2B103J	CYLND CHIP R 10K J 1/8W		

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R42			RD41DB2B222J	CYLND CHIP R 2.2K J 1/8W		
R43			RD41DB2B223J	CYLND CHIP R 22K J 1/8W		
R44			RD41DB2B222J	CYLND CHIP R 2.2K J 1/8W		
R45			RD41DB2B152J	CYLND CHIP R 1.5K J 1/8W		
R48			RD41DB2B152J	CYLND CHIP R 1.5K J 1/8W		
R49			RD41DB2B222J	CYLND CHIP R 2.2K J 1/8W		
R50			RD41DB2B472J	CYLND CHIP R 4.7K J 1/8W		
R51			RD41DB2B332J	CYLND CHIP R 3.3K J 1/8W		
R52			RD41DB2B103J	CYLND CHIP R 10K J 1/8W		
R53 ,54			RD41DB2B101J	CYLND CHIP R 100 J 1/8W		
R55			RD41DB2B220J	CYLND CHIP R 22 J 1/8W		
R56			RD41DB2B103J	CYLND CHIP R 10K J 1/8W		
R57			RD41DB2B333J	CYLND CHIP R 33K J 1/8W		
R58 ,59			RD41DB2B103J	CYLND CHIP R 10K J 1/8W		
R61 -63			RD41DB2B102J	CYLND CHIP R 1.0K J 1/8W		
R64			RD41DB2B220J	CYLND CHIP R 22 J 1/8W		
R65			RD41DB2B472J	CYLND CHIP R 4.7K J 1/8W		
R66			RD41DB2B102J	CYLND CHIP R 1.0K J 1/8W		
R67			RD41DB2B222J	CYLND CHIP R 2.2K J 1/8W		
R68			RD41DB2B472J	CYLND CHIP R 4.7K J 1/8W		
R69			RD41DB2B222J	CYLND CHIP R 2.2K J 1/8W		
R70			RD41DB2B472J	CYLND CHIP R 4.7K J 1/8W		
R71			RD41DB2B473J	CYLND CHIP R 47K J 1/8W		
R72			RD41DB2B102J	CYLND CHIP R 1.0K J 1/8W		
R73 -76			RD41DB2B101J	CYLND CHIP R 100 J 1/8W		
R77 ,78			RD41DB2B102J	CYLND CHIP R 1.0K J 1/8W		
R79 -88			RD41DB2B222J	CYLND CHIP R 2.2K J 1/8W		
R89 ,90			RD41DB2B332J	CYLND CHIP R 3.3K J 1/8W		
R91 ,92			RD41DB2B473J	CYLND CHIP R 47K J 1/8W		
R93 ,94			RD41DB2B103J	CYLND CHIP R 10K J 1/8W		
R95			RD41DB2B220J	CYLND CHIP R 22 J 1/8W		
R96			RD41DB2B102J	CYLND CHIP R 1.0K J 1/8W		
R97 -100			RD41DB2B473J	CYLND CHIP R 47K J 1/8W		
R101,102			RD41DB2B272J	CYLND CHIP R 2.7K J 1/8W	T	
R101,102			RD41DB2B682J	CYLND CHIP R 6.8K J 1/8W	K	
R103,104			RD41DB2B153J	CYLND CHIP R 15K J 1/8W		
R105,106			RD41DB2B102J	CYLND CHIP R 1.0K J 1/8W		
R107,108			RD41DB2B122J	CYLND CHIP R 1.2K J 1/8W		
R109			RD41DB2B220J	CYLND CHIP R 22 J 1/8W		
R110			RD41DB2B102J	CYLND CHIP R 1.0K J 1/8W		
R111			RD41DB2B222J	CYLND CHIP R 2.2K J 1/8W		
R112			RD41DB2B2R2J	CYLND CHIP R 2.2 J 1/8W		
R113			RD41DB2B102J	CYLND CHIP R 1.0K J 1/8W		
R114			RD41DB2B2R2J	CYLND CHIP R 2.2 J 1/8W		
R115			RD41DB2B472J	CYLND CHIP R 4.7K J 1/8W		
R117,118			RD41DB2B472J	CYLND CHIP R 4.7K J 1/8W		
R119		*	RK73FB2A150J	CHIP R 15 J 1/10W		
VR1			R12-3072-05	TRIMMING POT. (22K)ANRC		
VR2			R12-5044-05	TRIMMING POT. (100K)FM STOP		
VR3			R12-3099-05	TRIMMING POT. (47K)SOFT MUTE		
VR4			R12-3096-05	TRIMMING POT. (10K)SEPARATION		
VR5			R12-3099-05	TRIMMING POT. (47K)AM STOP		
VR6 ,7			R12-5046-05	TRIMMING POT. (100K)S-METER		
D1			RLS-73	DIODE		

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D2			DA204K	DIODE		
D3			DAN202K	DIODE		
D8 ,9			RLS-73	DIODE		
D10			DSP-301N-S00B	SURGE ABSORBER		
D11			ERA15-01Y1	DIODE		
D12 -15			RLS-73	DIODE		
D16			DAN202K	DIODE		
D17 -20			RLS-73	DIODE		
D21			RLZJ5.6	ZENER DIODE		
D22			RLZJ10	ZENER DIODE		
D24 -26			DA204K	DIODE		
D27			RLS-73	DIODE		
IC1		*	IF3S201B	IC(FM IF AMP/ DET)		
IC2		*	KC-825	IC(NOISE CANCELLER/ MPX)		
IC3			LM7001	IC(PLL FREQUENCY SYNTHESIZER)		
IC4			AN6554	IC(OP AMP X4)		
IC5			AN6556	IC(OP AMP X2)		
Q1			DTC143TK	DIGITAL TRANSISTOR		
Q2			2SC2413K	TRANSISTOR		
Q3			2SA1037K	TRANSISTOR		
Q4			DTC124EK	DIGITAL TRANSISTOR		
Q5			2SC2412K	TRANSISTOR	K	
Q5 ,6			2SC2412K	TRANSISTOR	T	
Q10			2SA1037K	TRANSISTOR		
Q11		*	2SK669	FET		
Q13 -15			2SC2412K	TRANSISTOR		
Q16 ,17			2SB822F	TRANSISTOR		
Q19 ,20			2SC2412K	TRANSISTOR		
Q21			2SD966	TRANSISTOR		
Q22			2SC3422	TRANSISTOR		
Q23			DTC144EK	DIGITAL TRANSISTOR		
Q24			DTA143EK	DIGITAL TRANSISTOR		
Q25 ,26			2SD1757K	TRANSISTOR		
312	2I		W02-0667-05	AM TUNER		
313	2I	*	W02-0768-05	FM FRONT-END ASSY		

AUDIO UNIT (X09-2550-11)

C1			CK73FB1H103K	CHIP C	0.010UF	K		
C2			C90-0824-05	ELECTRO	1UF	50WV		
C3 -6			C90-1263-05	ELECTRO	100UF	16WV		
C7 -10			CK73FB1H103K	CHIP C	0.010UF	K		
C11 -14			C90-0824-05	ELECTRO	1UF	50WV		
C15 -18			CK73FB1H103K	CHIP C	0.010UF	K		
C19 ,20			C90-0824-05	ELECTRO	1UF	50WV		
C21 -25			CK73FB1H103K	CHIP C	0.010UF	K		
C26 ,27		*	CE04MW1C100M	ELECTRO	10UF	16WV		
C28 ,29			CF92V1H103J	MF	0.010UF	J		
C30			C90-0824-05	ELECTRO	1UF	50WV		
C33 ,34			CC73FCH1H121J	CHIP C	120PF	J		
C35		*	CC73FCH1H270J	CHIP C	27PF	J		
C54 -57			CE04DW1C100M	ELECTRO	10UF	16WV		
C58 ,59			CC73FCH1H330J	CHIP C	33PF	J		
C60 ,61			CE04DW1C100M	ELECTRO	10UF	16WV		
C62 ,63			CK73FB1E473K	CHIP C	0.047UF	K		
C64 ,65			CK73FB1H222K	CHIP C	2200PF	K		

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C66 ,67			CK73FB1H272K	CHIP C 2700PF K		
C68 ,69			CE04DW1C100M	ELECTRO 10UF 16WV		
C74 -77			CE04DW1C100M	ELECTRO 10UF 16WV		
C78 ,79		*	CC73FCH1H271J	CHIP C 270PF J		
C80 ,81			CE04DW1C100M	ELECTRO 10UF 16WV		
C82 ,83		*	CE04MW1C100M	ELECTRO 10UF 16WV		
C84 ,85			CE04DW1C100M	ELECTRO 10UF 16WV		
C86 ,87		*	CC73FCH1H271J	CHIP C 270PF J		
C88 ,89			CE04DW1C100M	ELECTRO 10UF 16WV		
C90 ,91		*	CE04MW1C100M	ELECTRO 10UF 16WV		
C92			C90-0478-05	ELECTRO 10UF 16WV		
C100			CK73FB1H103K	CHIP C 0.010UF K		
C101,102			C90-1263-05	ELECTRO 100UF 16WV		
C103			CK73FB1H103K	CHIP C 0.010UF K		
C106			C90-1263-05	ELECTRO 100UF 16WV		
C107-109			CK73FB1H103K	CHIP C 0.010UF K		
C110			C90-1263-05	ELECTRO 100UF 16WV		
C111-113			CK73FB1H103K	CHIP C 0.010UF K		
C115,116			CE04DW1C100M	ELECTRO 10UF 16WV		
C117,118			C90-1408-05	ELECTRO 220UF 6.3WV		
C119-121			CC73FCH1H120J	CHIP C 12PF J		
279	1G		E30-2264-05	CORD WITH DIN CONNECTOR		
LPF1		*	L79-0749-05	ACTIVE FILTER		
LPF2		*	L79-0748-05	ACTIVE FILTER		
J1 -4			R92-0338-05	CLYND CHIP R 0 OHM		
J5 -7			R92-0670-05	CHIP R 0 OHM		
J8			R92-0338-05	CLYND CHIP R 0 OHM		
J9			R92-0670-05	CHIP R 0 OHM		
R1		*	RD41FB2B390J	CYLND CHIP R 39 J 1/8W		
R2 ,3			RS14DB3D560J	FL-PROOF RS 56 J 2W		
R4 ,5		*	RD41FB2B104J	CYLND CHIP R 100K J 1/8W		
R6 ,7			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R8		*	RD41FB2B390J	CYLND CHIP R 39 J 1/8W		
R19		*	RD41FB2B471J	CYLND CHIP R 470 J 1/8W		
R20 -27			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R28 -31			RD41FB2B472J	CYLND CHIP R 4.7K J 1/8W		
R32 -35			RD41FB2B152J	CYLND CHIP R 1.5K J 1/8W		
R36 -39		*	RD41FB2B104J	CYLND CHIP R 100K J 1/8W		
R44 ,45		*	RD41FB2B473J	CYLND CHIP R 47K J 1/8W		
R46 ,47			RD41FB2B562J	CYLND CHIP R 5.6K J 1/8W		
R48 ,49			RD41FB2B472J	CYLND CHIP R 4.7K J 1/8W		
R50 ,51			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R52 ,53		*	RD41FB2B821J	CYLND CHIP R 820 J 1/8W		
R54 ,55		*	RD41FB2B104J	CYLND CHIP R 100K J 1/8W		
R56 ,57		*	RD41FB2B473J	CYLND CHIP R 47K J 1/8W		
R58 ,59			RD41FB2B562J	CYLND CHIP R 5.6K J 1/8W		
R60 ,61			RD41FB2B472J	CYLND CHIP R 4.7K J 1/8W		
R62 ,63			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R64 ,65		*	RD41FB2B821J	CYLND CHIP R 820 J 1/8W		
R66 ,67		*	RD41FB2B104J	CYLND CHIP R 100K J 1/8W		
R68		*	RD41FB2B473J	CYLND CHIP R 47K J 1/8W		
R70 ,71			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R73		*	RD41FB2B473J	CYLND CHIP R 47K J 1/8W		

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R74 ,75			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R76 ,77		*	RD41FB2B473J	CYLND CHIP R 47K J 1/8W		
R78			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R79 -82			RD41FB2B560J	CYLND CHIP R 56 J 1/8W		
R83		*	RD41FB2B302J	CYLND CHIP R 3.0K J 1/8W		
R84 ,85		*	RD41FB2B473J	CYLND CHIP R 47K J 1/8W		
R86		*	RD41FB2B302J	CYLND CHIP R 3.0K J 1/8W		
R87 ,88		*	RD41FB2B132J	CYLND CHIP R 1.3K J 1/8W		
R89		*	RD41FB2B104J	CYLND CHIP R 100K J 1/8W		
R91 ,92			RD41FB2B560J	CYLND CHIP R 56 J 1/8W		
S1	2G	*	S31-4022-05	SLIDE SWITCH		
D1 ,2		*	RLZJ5.6(B,C)	ZENER DIODE		
D3 -6		*	RLZJ12(A,B)	ZENER DIODE		
D9			RLS-73	DIODE		
IC1 ,2		*	PCM56P	IC(DA CONVERTER)		
IC3		*	UPD74HC04G	IC(HEX INVERTER)		
IC4			UPD4053BG	IC(3-INPUT 2CH MPX/DE-MPX)		
IC5 ,6		*	M5201FP	IC(OP AMP X2)		
IC7			TC9188F	IC(2CH ELECTRIC VOLUME)		
IC8 -10			NJM4560M	IC(OP AMP X2)		
IC11,12			NJM2041M	IC(OP AMP X2)		
IC15			TA78L05F	IC(VOLTAGE REGULATOR/ +5V)		
IC16		*	TA79L005P	IC(VOLTAGE REGULATOR/ -5V)		
Q1			2SC2412K	TRANSISTOR		
Q2 -5			2SD1757K	TRANSISTOR		
SUB-CIRCUIT UNIT (X13-5690-00)						
C1 ,2		*	CK73DB1H154K	CHIP C 0.15UF K		
C3 ,4			CK73EB1E104K	CHIP C 0.10UF K		
C5 ,6			CK73FB1H103K	CHIP C 0.010UF K		
C7		*	CK73FF1H103Z	CHIP C 0.010UF Z		
C8		*	C92-0012-05	TANTAL 22UF 6.3WV		
C10			CK73FB1H103K	CHIP C 0.010UF K		
C11		*	C92-0008-05	CHIP TAN 3.3UF 16WV		
C12			CK73FB1H103K	CHIP C 0.010UF K		
C13 ,14			CK73FB1E473K	CHIP C 0.047UF K		
C15		*	CC73FCH1H471K	CHIP C 470PF K		
C16			CK73FB1H102K	CHIP C 1000PF K		
C17		*	CK73FF1H103Z	CHIP C 0.010UF Z		
C18		*	C92-0012-05	TANTAL 22UF 6.3WV		
C19 ,20		*	CC73FCH1H471K	CHIP C 470PF K		
C21		*	C92-0012-05	TANTAL 22UF 6.3WV		
C22		*	CK73FF1H103Z	CHIP C 0.010UF Z		
C31			C90-1409-05	ELECTRO 220UF 10WV		
C32		*	CK73FB1H472K	CHIP C 4700PF K		
C33 -35			CK73FB1E473K	CHIP C 0.047UF K		
C36			CE04CW1A101M	ELECTRO 100UF 10WV		
C37			C90-1409-05	ELECTRO 220UF 10WV		
C38			C90-0495-05	ELECTRO 47UF 6.3WV		
C39			CE04CW1H010M	ELECTRO 1.0UF 50WV		
C40 -42		*	CK73FF1H103Z	CHIP C 0.010UF Z		
C44 ,45		*	CK73FF1H103Z	CHIP C 0.010UF Z		
C60 -63		*	CK73FF1H103Z	CHIP C 0.010UF Z		
C64			CF92V1H104J	MF 0.10UF J		
C65			CK73FB1H332K	CHIP C 3300PF K		

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C66 ,67			CE04CW0J470M	ELECTRO 47UF 6.3WV		
C69 -71			CE04CW1A220M	ELECTRO 22UF 10WV		
L1 ,2		*	L40-1511-18	SMALL FIXED INDUCTOR		
-			R92-0338-05	CLYND CHIP R 0 OHM		
-			R92-0670-05	CHIP R 0 OHM		
R1 ,2			RK73FB2A393J	CHIP R 39K J 1/10W		
R3			RK73FB2A273J	CHIP R 27K J 1/10W		
R4		*	RK73FB2A303J	CHIP R 30K J 1/10W		
R5			RK73FB2A273J	CHIP R 27K J 1/10W		
R6 ,7			RK73FB2A103J	CHIP R 10K J 1/10W		
R8			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R10 ,11			RK73FB2A101J	CHIP R 100 J 1/10W		
R12			RK73FB2A561J	CHIP R 560 J 1/10W		
R13			RK73FB2A100J	CHIP R 10 J 1/10W		
R14			RK73FB2A913J	CHIP R 91K J 1/10W		
R15			RK73FB2A563J	CHIP R 56K J 1/10W		
R16			RK73FB2A104J	CHIP R 100K J 1/10W		
R17			RK73FB2A154J	CHIP R 150K J 1/10W		
R18			RK73FB2A223J	CHIP R 22K J 1/10W		
R19			RK73FB2A103J	CHIP R 10K J 1/10W		
R20 ,21			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R22			RK73FB2A223J	CHIP R 22K J 1/10W		
R23			RK73FB2A103J	CHIP R 10K J 1/10W		
R24 -27			RK73FB2A473J	CHIP R 47K J 1/10W		
R28 ,29			RK73FB2A681J	CHIP R 680 J 1/10W		
R32			RK73FB2A391J	CHIP R 390 J 1/10W		
R33 ,34			RK73FB2A103J	CHIP R 10K J 1/10W		
R35			RK73FB2A151J	CHIP R 150 J 1/10W		
R36			RK73FB2A103J	CHIP R 10K J 1/10W		
R37			RK73FB2A474J	CHIP R 470K J 1/10W		
R39			RK73FB2A474J	CHIP R 470K J 1/10W		
R40			RK73FB2A104J	CHIP R 100K J 1/10W		
R41			RK73FB2A473J	CHIP R 47K J 1/10W		
R42			RK73FB2A103J	CHIP R 10K J 1/10W		
R43			RK73FB2A333J	CHIP R 33K J 1/10W		
R44			RK73FB2A153J	CHIP R 15K J 1/10W		
R45			RK73FB2A474J	CHIP R 470K J 1/10W		
R46			RK73FB2A473J	CHIP R 47K J 1/10W		
R47			RK73FB2A104J	CHIP R 100K J 1/10W		
R48			RK73FB2A103J	CHIP R 10K J 1/10W		
R49			RK73FB2A104J	CHIP R 100K J 1/10W		
R50			RK73FB2A474J	CHIP R 470K J 1/10W		
R51		*	RK73FB2A821J	CHIP R 820 J 1/10W		
R52			RK73FB2A123J	CHIP R 12K J 1/10W		
R53 -58			RK73FB2A473J	CHIP R 47K J 1/10W		
R60 ,61			RK73FB2A271J	CHIP R 270 J 1/10W		
R62 ,63			RK73FB2A151J	CHIP R 150 J 1/10W		
R68 ,69			RK73FB2A471J	CHIP R 470 J 1/10W		
R74 ,75			RK73FB2A104J	CHIP R 100K J 1/10W		
R76			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R77			RK73FB2A152J	CHIP R 1.5K J 1/10W		
R78			RK73FB2A682J	CHIP R 6.8K J 1/10W		
R79			RK73FB2A152J	CHIP R 1.5K J 1/10W		

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
R80 ,81			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R82			RK73FB2A152J	CHIP R 1.5K J 1/10W		
R83			RK73FB2A392J	CHIP R 3.9K J 1/10W		
R84			RK73FB2A221J	CHIP R 220 J 1/10W		
R86			RK73FB2A823J	CHIP R 82K J 1/10W		
R87			RK73FB2A223J	CHIP R 22K J 1/10W		
R88			RK73FB2A683J	CHIP R 68K J 1/10W		
R89			RK73FB2A223J	CHIP R 22K J 1/10W		
R90			RK73FB2A683J	CHIP R 68K J 1/10W		
R91			RK73FB2A123J	CHIP R 12K J 1/10W		
R93			RK73FB2A473J	CHIP R 47K J 1/10W		
R94 ,95			RK73FB2A101J	CHIP R 100 J 1/10W		
R96			RK73FB2A151J	CHIP R 150 J 1/10W		
R98			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R99			RK73FB2A100J	CHIP R 10 J 1/10W		
R100,101			RK73FB2A103J	CHIP R 10K J 1/10W		
R102,103			RK73FB2A101J	CHIP R 100 J 1/10W		
R104			RK73FB2A151J	CHIP R 150 J 1/10W		
R105			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R106			RK73FB2A100J	CHIP R 10 J 1/10W		
R107			RK73FB2A103J	CHIP R 10K J 1/10W		
R108			RK73FB2A822J	CHIP R 8.2K J 1/10W		
VR1 ,2		*	R12-5062-05	TRIMMING POT.(100K)RF,ERR RATE		
VR5			R12-1053-05	TRIMMING POT.(4.7K)BACK TENS.		
D10 ,11			DLS1585	DIODE		
D10 ,11			RLS-73	DIODE		
D12			DAN202K	DIODE		
D13			DA204K	DIODE		
IC1		*	CXA1045Q	IC(REC/PB EQ AMP)		
IC2			UPC393G2	IC(VOLTAGE COMPARATOR)		
IC3		*	UPD82C43G	IC(MICROPROCESSOR)		
IC4 ,5			UPC358G2	IC(OP AMP X2)		
IC6		*	M54649L	IC(MOTOR DRIVER)		
IC8			UPC358G2	IC(OP AMP X2)		
IC11,12		*	UPD4053BG	IC(3-INPUT 2CH MPX/DE-MPX)		
IC13		*	BA6303F	IC(SPEED CONTROLLER)		
Q1			2SC2412K	TRANSISTOR		
Q2			2SC2411K	TRANSISTOR		
Q3 ,4			DTC124EK	DIGITAL TRANSISTOR		
Q5			2SB1188	TRANSISTOR		
Q6			DTC124EK	DIGITAL TRANSISTOR		
Q10 ,11			2SC2411K	TRANSISTOR		
Q12			DTC124EK	DIGITAL TRANSISTOR		
SUB-CIRCUIT UNIT (X13-5760-00)						
-			T95-0043-05	HALL ELEMENT		
SYNTHESIZER UNIT (X14-2230-11)						
C1			CE04DW1A101M	ELECTRO 100UF 10WV		
C2			CK73FB1H223K	CHIP C 0.022UF K		
C3			CE04DW1HR33M	ELECTRO 0.33UF 50WV		
C4 -6			CE04DW1A101M	ELECTRO 100UF 10WV		
C7 ,8			CK73FB1H103K	CHIP C 0.010UF K		
C9		*	CE04DW1HR33M	ELECTRO 0.33UF 50WV		
C10 ,11			CE04DW1C221M	ELECTRO 220UF 16WV		
C12 ,13			CE04DW1C100M	ELECTRO 10UF 16WV		

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C14 -18			CK73FB1H103K	CHIP C 0.010UF K	KT	
C19 -21			CE04DW1C100M	ELECTRO 10UF 16WV	KT	
C22			CE04DW1C100M	ELECTRO 10UF 16WV		
C23			CE04DW1C100M	ELECTRO 10UF 16WV		
C24		*	CE04DW1A330M	ELECTRO 33UF 10WV		
C25 -27			CK73FB1H103K	CHIP C 0.010UF K		
C28		*	CE04DW1H470M	ELECTRO 47UF 50WV		
C29 ,30		*	CK73EB1E104K	CHIP C 0.10UF K		
C31			CE04DW1C102M	ELECTRO 1000UF 16WV		
C32 ,33			CE04DW1C101M	ELECTRO 100UF 16WV		
C34			CK73FB1H223K	CHIP C 0.022UF K		
C35			CK73FB1H103K	CHIP C 0.010UF K		
C36			CE04DW1C220M	ELECTRO 22UF 16WV		
C51 ,52		*	CK73EB1E104K	CHIP C 0.10UF K		
		*	E30-2356-05	GROUND WIRE		
283	1G,1H	*	E30-2261-15	CORD WITH DIN CONNECTOR		
CN25		*	E10-2805-05	FLAT CABLE CONNECTOR		
CN26,27		*	E10-1016-05	FLAT CABLE CONNECTOR		
W13	1H		E30-2242-05	CORD WITH PLUG		
X1			L78-0216-05	RESONATOR (4.194MHZ)		
CP1 ,2		*	R90-0489-05	COMPOSITE ELEMENTS		
J1 -3			R92-0670-05	CHIP R 0 OHM	E	
J5			R92-0338-05	CLYND CHIP R 0 OHM		
R1			RK73FB2A473J	CHIP R 47K J 1/10W		
R3			RK73FB2A470J	CHIP R 47 J 1/10W		
R5 -8			RK73FB2A104J	CHIP R 100K J 1/10W		
R16		*	RS14DB3A150J	FL-PROOF RS 15 J 1W		
R17			RD14DB2H102J	SMALL-RD 1.0K J 1/2W		
R18 ,19			RK73FB2A103J	CHIP R 10K J 1/10W		
R20			RK73FB2A473J	CHIP R 47K J 1/10W		
R23			RK73FB2A104J	CHIP R 100K J 1/10W		
R24 ,25			RD41FB2B104J	CYLND CHIP R 100K J 1/8W		
R26 ,27			RD41FB2B562J	CYLND CHIP R 5.6K J 1/8W		
R28			RK73FB2A103J	CHIP R 10K J 1/10W		
R29 ,30			RD41FB2B103J	CYLND CHIP R 10K J 1/8W	KT	
R31 ,32			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R35 ,36			RD41FB2B104J	CYLND CHIP R 100K J 1/8W	KT	
R37 ,38			RK73FB2A473J	CHIP R 47K J 1/10W	KT	
R39			RK73FB2A392J	CHIP R 3.9K J 1/10W	KT	
R40 ,41			RK73FB2A273J	CHIP R 27K J 1/10W	KT	
R42 -45			RK73FB2A103J	CHIP R 10K J 1/10W		
R46			RK73FB2A473J	CHIP R 47K J 1/10W		
R47			RK73FB2A223J	CHIP R 22K J 1/10W		
R49			RK73FB2A473J	CHIP R 47K J 1/10W		
R50 ,51			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R52 ,53			RD41FB2B104J	CYLND CHIP R 100K J 1/8W		
R54			RK73FB2A103J	CHIP R 10K J 1/10W		
R55			RK73FB2A473J	CHIP R 47K J 1/10W		
R56			RK73FB2A103J	CHIP R 10K J 1/10W		
R57			RK73FB2A223J	CHIP R 22K J 1/10W		
R58			RK73FB2A152J	CHIP R 1.5K J 1/10W		
R59			RK73FB2A392J	CHIP R 3.9K J 1/10W		
R60		*	RK73FB2A8R2J	CHIP R 8.2 J 1/10W		
R61			RS14DB3D151J	FL-PROOF RS 150 J 2W		

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R62		*	RS14DB3A471J	FL-PROOF RS 470 J 1W		
R63			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R65			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R68			RK73FB2A182J	CHIP R 1.8K J 1/10W		
R69 -75			RK73FB2A103J	CHIP R 10K J 1/10W		
R76			RK73FB2A472J	CHIP R 4.7K J 1/10W	E	
R77			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R78			RK73FB2A473J	CHIP R 47K J 1/10W	KT	
R79			RK73FB2A103J	CHIP R 10K J 1/10W	KT	
R80			RK73FB2A473J	CHIP R 47K J 1/10W	KT	
R81			RK73FB2A103J	CHIP R 10K J 1/10W	KT	
R82			RK73FB2A473J	CHIP R 47K J 1/10W	KT	
R83			RK73FB2A103J	CHIP R 10K J 1/10W		
R84			RK73FB2A154J	CHIP R 150K J 1/10W		
R86			RK73FB2A103J	CHIP R 10K J 1/10W	KT	
R87 ,88			RK73FB2A103J	CHIP R 10K J 1/10W		
R89 -91			RK73FB2A221J	CHIP R 220 J 1/10W		
R92 -94			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R95			RK73FB2A470J	CHIP R 47 J 1/10W		
R96 -99			RK73FB2A102J	CHIP R 1.0K J 1/10W	KT	
R100			RK73FB2A472J	CHIP R 4.7K J 1/10W	KT	
R101-103			RK73FB2A224J	CHIP R 220K J 1/10W		
BZ1			T95-0016-05	PIEZOELECTRIC VIBRATOR		
D1 -4			DLS1585	DIODE	TE	
D1 -4			RLS-73	DIODE	K	
D1 -5			DLS1585	DIODE	K	
D5			RLS-73	DIODE	E	
D7			DLS1585	DIODE		
D7			RLS-73	DIODE	E	
D7 -9			DLS1585	DIODE	T	
D8			RLS-73	DIODE	KT	
D8 ,9			DLS1585	DIODE	K	
D9			DLS1585	DIODE	E	
D9			RLS-73	DIODE		
D10			RLZJ5.1	ZENER DIODE		
D11			DLS1585	DIODE	E	
D11			RLS-73	DIODE		
D11 -13			DLS1585	DIODE	KT	
D12			RLS-73	DIODE	KT	
D13			DLS1585	DIODE	E	
D13			RLS-73	DIODE		
D14			DAN202K	DIODE		
D15 -17			DSM1A1	DIODE		
D15 -17		*	1SR139-100	DIODE		
D18		*	RLZJ3.9	ZENER DIODE		
D19 ,20			DLS1585	DIODE		
D19 ,20			RLS-73	DIODE		
D21			DAN202K	DIODE		
D22			DLS1585	DIODE		
D22			RLS-73	DIODE		
D23			DAP202K	DIODE	KT	
D24			DSM1A1	DIODE		
D24		*	1SR139-100	DIODE		

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D25 -28			DA204K	DIODE	KT	
D29			RLS-73	DIODE		
IC1		*	UPD75108G574-1B	IC(MICROPROCESSOR)		
IC2		*	TD62505F	IC(TRANSISTOR ARRAY)		
IC3		*	TC74HC541F	IC(OCTAL BUSS BUFFER)	KT	
IC4			KC-855	IC(ISOLATION AMP)	KT	
IC5			KC-855	IC(ISOLATION AMP)		
IC6 ,7			M5201FP	IC(OP AMP X2)	KT	
IC8		*	TA78DS05P	IC(VOLTAGE REGULATOR/ +5V)		
IC9		*	PST520F	IC(LOW POWER RESET)		
IC10			PST520C	IC(SYSTEM RESET)		
Q1			DTA124EK	DIGITAL TRANSISTOR	KT	
Q2 ,3			DTC124EK	DIGITAL TRANSISTOR	KT	
Q4			DTA124EK	DIGITAL TRANSISTOR	KT	
Q5			DTC124EK	DIGITAL TRANSISTOR	KT	
Q6			DTC124EK	DIGITAL TRANSISTOR		
Q8			DTC124EK	DIGITAL TRANSISTOR		
Q9			2SC2412K	TRANSISTOR	KT	
Q10			DTA124EK	DIGITAL TRANSISTOR	KT	
Q12			DTC124EK	DIGITAL TRANSISTOR		
Q13			DTA124EK	DIGITAL TRANSISTOR		
Q14 -17			DTC124EK	DIGITAL TRANSISTOR		
Q18			2SB1188	TRANSISTOR		
Q19			DTC124EK	DIGITAL TRANSISTOR		
Q20			2SB1188	TRANSISTOR		
Q21 ,22			DTC124EK	DIGITAL TRANSISTOR		
Q23			DTA124EK	DIGITAL TRANSISTOR		
Q24			DTC124EK	DIGITAL TRANSISTOR	KT	
Q25			DTA124EK	DIGITAL TRANSISTOR		
Q26 -29			DTC124EK	DIGITAL TRANSISTOR		
Q30 -32			2SD1664	TRANSISTOR		
Q33			2SC2412K	TRANSISTOR	E	

CONTROL CIRCUIT UNIT (X29-1830-00)

C1			CE04CW0J470M	ELECTRO	47UF	6.3WV	
C2 -5			CE04CW1E4R7M	ELECTRO	4.7UF	25WV	
C10 -12			CK73EB1E104K	CHIP C	0.10UF	K	
C13			CE04CW0J220M	ELECTRO	22UF	6.3WV	
C14			CE04CW1A470M	ELECTRO	47UF	10WV	
C15			CE04CW1H010M	ELECTRO	1.0UF	50WV	
C16			CE04CW0J330M	ELECTRO	33UF	6.3WV	
C17			CK73FB1H223K	CHIP C	0.022UF	K	
C18			CE04CW1C100M	ELECTRO	10UF	16WV	
C19			CK73FB1H103K	CHIP C	0.010UF	K	
C20			CK73FB1H223K	CHIP C	0.022UF	K	
C21			CK73EB1E104K	CHIP C	0.10UF	K	
C22			CF92V1H153J	MF	0.015UF	J	
C24 ,25			CK73EB1E104K	CHIP C	0.10UF	K	
C26			CE04CW0J470M	ELECTRO	47UF	6.3WV	
C27			CE04CW1C100M	ELECTRO	10UF	16WV	
C28			CE04CW1A470M	ELECTRO	47UF	10WV	
C29			CK73EB1E104K	CHIP C	0.10UF	K	
C40 ,41		*	CC73FCH1H8R0D	CHIP C	8.0PF	D	
C42		*	CC73FCH1H151J	CHIP C	150PF	J	
C43			CC73FCH1H150J	CHIP C	15PF	J	

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C44		*	CC73ECH1H102K	CHIP C 1000PF K		
C45		*	CC73FCH1H060C	CHIP C 6.0PF C		
C46 ,47			CE04CW1C100M	ELECTRO 10UF 16WV		
C48		*	CC73FCH1H121J	CHIP C 120PF J		
C49			CK73FB1H472K	CHIP C 4700PF K		
C50 ,51			CK73EB1E104K	CHIP C 0.10UF K		
C52			C92-0012-05	TANTAL 22UF 6.3WV		
C54			CC73FCH1H101J	CHIP C 100PF J		
C55			CK73FB1H103K	CHIP C 0.010UF K		
C56			CE04CW1C100M	ELECTRO 10UF 16WV		
C57 ,58			CK73FB1H103K	CHIP C 0.010UF K		
C59 ,60			CK73FB1H223K	CHIP C 0.022UF K		
C61 -63			CK73FB1H103K	CHIP C 0.010UF K		
C64			CK73FB1H472K	CHIP C 4700PF K		
C65			C92-0012-05	TANTAL 22UF 6.3WV		
C66			CE04CW0J220M	ELECTRO 22UF 6.3WV		
C67 ,68			C92-0003-05	CHIP TAN 0.47UF 25WV		
C69 -72		*	CC73FCH1H8R0D	CHIP C 8.0PF D		
C74			C92-0012-05	TANTAL 22UF 6.3WV		
C75			CK73EB1E104K	CHIP C 0.10UF K		
C76			CK73FB1H223K	CHIP C 0.022UF K		
C77 ,78			CK73FB1H103K	CHIP C 0.010UF K		
C80		*	CC73FCH1H151J	CHIP C 150PF J		
C81			CK73FB1H103K	CHIP C 0.010UF K		
C82		*	CC73FCH1H120J	CHIP C 12PF J		
C83 ,84			CK73FB1H223K	CHIP C 0.022UF K		
C85			CK73FB1H102K	CHIP C 1000PF K		
C86			CK41DB1H331K	CYLND CHIP C 330PF K		
C100			CE04CW0J470M	ELECTRO 47UF 6.3WV		
C101			CK73FB1H102K	CHIP C 1000PF K		
C102,103			CK73EB1E473K	CHIP C 0.047UF K		
C104,105			CK73FB1H102K	CHIP C 1000PF K		
C106			CF92V1H473J	MF 0.047UF J		
C107			CK73FB1H102K	CHIP C 1000PF K		
C108-110			CE04CW1C100M	ELECTRO 10UF 16WV		
C111			CK73EB1E473K	CHIP C 0.047UF K		
C120			CE04CW1A470M	ELECTRO 47UF 10WV		
C121,122			CK73EB1E104K	CHIP C 0.10UF K		
CN13			E10-1505-05	FLAT CABLE CONNECTOR		
CN18		*	E10-1409-05	FLAT CABLE CONNECTOR		
L1			L40-1511-18	SMALL FIXED INDUCTOR		
L2		*	L40-1001-18	SMALL FIXED INDUCTOR		
L3		*	L32-0372-05	OSCILATING COIL		
X1		*	L77-1123-05	CRYSTAL RESONATOR		
X2		*	L77-1124-05	CRYSTAL RESONATOR		
X3		*	L77-1125-05	CRYSTAL RESONATOR		
X4			L78-0216-05	RESONATOR (4.194MHZ)		
-			R92-0338-05	CLYND CHIP R 0 OHM		
-			R92-0670-05	CHIP R 0 OHM		
R1			RK73FB2A680J	CHIP R 68 J 1/10W		
R2			RK73FB2A123J	CHIP R 12K J 1/10W		
R3			RK73FB2A682J	CHIP R 6.8K J 1/10W		
R4			RK73FB2A680J	CHIP R 68 J 1/10W		

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R5			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R6			RK73FB2A103J	CHIP R 10K J 1/10W		
R7		*	RK73FB2A304J	CHIP R 300K J 1/10W		
R8			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R9			RK73FB2A103J	CHIP R 10K J 1/10W		
R10			RK73FB2A104J	CHIP R 100K J 1/10W		
R11		*	RK73FB2A564J	CHIP R 560K J 1/10W		
R12			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R13			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R14			RK73FB2A682J	CHIP R 6.8K J 1/10W		
R15			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R16			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R17 ,18			RK73FB2A103J	CHIP R 10K J 1/10W		
R19			RK73FB2A474J	CHIP R 470K J 1/10W		
R20 ,21			RK73FB2A103J	CHIP R 10K J 1/10W		
R22			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R23		*	RK73FB2A304J	CHIP R 300K J 1/10W		
R24			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R25 ,26			RD41DB2B151J	CYLND CHIP R 150 J 1/8W		
R27			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R28 -30			RK73FB2A100J	CHIP R 10 J 1/10W		
R31			RK73FB2A103J	CHIP R 10K J 1/10W		
R32			RK73FB2A153J	CHIP R 15K J 1/10W		
R33			RK73FB2A103J	CHIP R 10K J 1/10W		
R34			RK73FB2A104J	CHIP R 100K J 1/10W		
R35		*	RK73FB2A431J	CHIP R 430 J 1/10W		
R36			RK73FB2A392J	CHIP R 3.9K J 1/10W		
R37			RK73FB2A273J	CHIP R 27K J 1/10W		
R38			RK73FB2A103J	CHIP R 10K J 1/10W		
R40			RK73FB2A163J	CHIP R 16K J 1/10W		
R41			RK73FB2A473J	CHIP R 47K J 1/10W		
R42		*	RK73FB2A131J	CHIP R 130 J 1/10W		
R43			RK73FB2A473J	CHIP R 47K J 1/10W		
R44			RK73FB2A681J	CHIP R 680 J 1/10W		
R45			RK73FB2A683J	CHIP R 68K J 1/10W		
R46			RK73FB2A122J	CHIP R 1.2K J 1/10W		
R47			RK73FB2A561J	CHIP R 560 J 1/10W		
R48			RK73FB2A103J	CHIP R 10K J 1/10W		
R49			RK73FB2A333J	CHIP R 33K J 1/10W		
R50			RK73FB2A683J	CHIP R 68K J 1/10W		
R51			RK73FB2A333J	CHIP R 33K J 1/10W		
R52			RK73FB2A103J	CHIP R 10K J 1/10W		
R53			RK73FB2A683J	CHIP R 68K J 1/10W		
R54			RK73FB2A753J	CHIP R 75K J 1/10W		
R55			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R60 -62			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R63			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R64			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R65 -67			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R68			RD41DB2B473J	CYLND CHIP R 47K J 1/8W		
R90			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R91 ,92		*	R92-0361-05	CHIP R 4.7K J 1/10W		
R93			RK73FB2A105J	CHIP R 1.0M J 1/10W		
R94			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R95			RK73FB2A103J	CHIP R 10K J 1/10W		

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R96			RK73FB2A912J	CHIP R 9.1K J 1/10W		
R97			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R98			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R99			RK73FB2A105J	CHIP R 1.0M J 1/10W		
R100			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R101			RK73FB2A473J	CHIP R 47K J 1/10W		
R102			RK73FB2A103J	CHIP R 10K J 1/10W		
R104,105			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R106-108			RK73FB2A333J	CHIP R 33K J 1/10W		
R109		*	RK73FB2A225J	CHIP R 2.2M J 1/10W		
R110			RD41DB2B683J	CYLND CHIP R 68K J 1/8W		
R111		*	RK73FB2A133J	CHIP R 13K J 1/10W		
R112		*	RK73FB2A113J	CHIP R 11K J 1/10W		
R113			RK73FB2A153J	CHIP R 15K J 1/10W		
R114,115			RK73FB2A103J	CHIP R 10K J 1/10W		
R117			RK73FB2A224J	CHIP R 220K J 1/10W		
R118			RK73FB2A114J	CHIP R 110K J 1/10W		
R119			RK73FB2A563J	CHIP R 56K J 1/10W		
R120			RK73FB2A224J	CHIP R 220K J 1/10W		
R121			RK73FB2A104J	CHIP R 100K J 1/10W		
R122			RK73FB2A684J	CHIP R 680K J 1/10W		
R123			RK73FB2A753J	CHIP R 75K J 1/10W		
R127		*	RK73FB2A164J	CHIP R 160K J 1/10W		
R128			RK73FB2A333J	CHIP R 33K J 1/10W		
R129			RK73FB2A682J	CHIP R 6.8K J 1/10W		
R130			RK73FB2A105J	CHIP R 1.0M J 1/10W		
R131,132			RK73FB2A473J	CHIP R 47K J 1/10W		
R133,134			RK73FB2A223J	CHIP R 22K J 1/10W		
R135			RK73FB2A473J	CHIP R 47K J 1/10W		
R136			RK73FB2A134J	CHIP R 130K J 1/10W		
R137,138		*	R92-0364-05	CHIP R 1M J 1/10W		
R139			RK73FB2A104J	CHIP R 100K J 1/10W		
R140,141			RK73FB2A223J	CHIP R 22K J 1/10W		
R142			RK73FB2A473J	CHIP R 47K J 1/10W		
R152,153		*	RK73FB2A131J	CHIP R 130 J 1/10W		
R154			RK73FB2A331J	CHIP R 330 J 1/10W		
R155-157			RK73FB2A271J	CHIP R 270 J 1/10W		
R158			RK73FB2A104J	CHIP R 100K J 1/10W		
R159			RK73FB2A105J	CHIP R 1.0M J 1/10W		
R160,161		*	RD41DB2B2R0J	CYLND CHIP R 2.0 J 1/8W		
R162			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R163,164			RK73FB2A563J	CHIP R 56K J 1/10W		
R165			RK73FB2A101J	CHIP R 100 J 1/10W		
R166			RK73FB2A271J	CHIP R 270 J 1/10W		
R167		*	RK73FB2A112J	CHIP R 1.1K J 1/10W		
R168			RK73FB2A563J	CHIP R 56K J 1/10W		
R169			RK73FB2A562J	CHIP R 5.6K J 1/10W		
R170			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R171			RK73FB2A562J	CHIP R 5.6K J 1/10W		
R172			RK73FB2A104J	CHIP R 100K J 1/10W		
R173			RK73FB2A333J	CHIP R 33K J 1/10W		
R174			RK73FB2A393J	CHIP R 39K J 1/10W		
R175			RK73FB2A223J	CHIP R 22K J 1/10W		
R176,177			RK73FB2A473J	CHIP R 47K J 1/10W		
R178			RK73FB2A223J	CHIP R 22K J 1/10W		

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R179			RK73FB2A104J	CHIP R 100K J 1/10W		
R180		*	RK73FB2A623J	CHIP R 62K J 1/10W		
R181		*	RK73FB2A243J	CHIP R 24K J 1/10W		
R183			RK73FB2A104J	CHIP R 100K J 1/10W		
R184			RK73FB2A563J	CHIP R 56K J 1/10W		
R189			RK73FB2A105J	CHIP R 1.0M J 1/10W		
R190			RK73FB2A103J	CHIP R 10K J 1/10W		
R191			RK73FB2A153J	CHIP R 15K J 1/10W		
R192-194		*	RK73EB2B3R0J	CHIP R 3.0 J 1/8W		
R196-198		*	RK73EB2B3R0J	CHIP R 3.0 J 1/8W		
R205			RK73FB2A473J	CHIP R 47K J 1/10W		
R206			RK73FB2A124J	CHIP R 120K J 1/10W		
R207			RK73FB2A683J	CHIP R 68K J 1/10W		
VR1 ,2		*	R12-5063-05	TRIMMING POT.(DPG,DRUM SERVO)		
VR5		*	R12-1101-05	TRIMMING POT.(PLL ERROR VOL)		
VR6 -8		*	R12-1091-05	TRIMMING POT.(ATF)		
VR20,21		*	R12-1095-05	TRIMMING POT.(SPEED ADJ)		
VR25		*	R12-3139-05	TRIMMING POT.(REVERSE TORQUE)		
D1		*	FC52M	VARIABLE CAPACITANCE DIODE		
D2			DA204K	DIODE		
D3			1SS176	DIODE		
D4			DA204K	DIODE		
D5			DLS1585	DIODE		
D5			RLS-73	DIODE		
D10 ,11			DLS1585	DIODE		
D10 ,11			RLS-73	DIODE		
D13			DA204K	DIODE		
IC1			NJM2904M	IC(OP AMP X2)		
IC1		*	UPC358G2	IC(OP AMP X2)		
IC2		*	UPC393G2	IC(VOLTAGE COMPARATOR)		
IC3		*	CX20174	IC(BSL MOTOR DRIVE)		
IC4			NJM2904M	IC(OP AMP X2)		
IC4		*	UPC358G2	IC(OP AMP X2)		
IC5		*	UPC324G2	IC(OP AMP X4)		
IC6		*	CXD1052Q	IC(R-DAT SERVO CONTROL)		
IC7		*	BA226F	IC(DUAL MONO MULTI)		
IC8		*	UPD75108G590-1B	IC		
IC10			AN6556S	IC(OP AMP X2)		
IC12		*	CXK58256MF-12L	IC(30KX8 RAM)		
IC12		*	MB84256-12LLPF	IC(30KX8 RAM)		
IC12		*	UPD43256MF-12L	IC(30KX8 RAM)		
IC13		*	CXD1009Q	IC(R-DAT SIGNAL PROCESSOR)		
IC14		*	CXD1008Q	IC(R-DAT SIGNAL PROCESSOR)		
IC15		*	NJM072M	IC(OP AMP X2)		
IC16			UPD4053BG	IC(3-INPUT 2CH MPX/DE-MPX)		
IC17			UPD4066BG	IC(BILATERAL SWITCH X4)		
IC18		*	CXA1046M	IC(ATF FOR R-DAT)		
IC19		*	UPC324G2	IC(OP AMP X4)		
IC20		*	BA6301F	IC(SPEED CONTROLLER)		
IC21		*	TA7745F	IC(MOTOR DRIVER)		
IC22		*	TC4526BF	IC(4BIT DOWN COUNTER)		
IC23			NJM2904M	IC(OP AMP X2)		
IC23		*	UPC358G2	IC(OP AMP X2)		
IC24		*	UPD4052BG	IC(4CH MPX/ DE-MPX)		

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Q1 ,2			DTC124EK	DIGITAL TRANSISTOR		
Q3			2SA1037K	TRANSISTOR		
Q4			2SB1188	TRANSISTOR		
Q5 ,6		*	FMW2	TRANSISTOR		
Q7		*	2SK160A(K25)	FET		
Q9			DTC124EK	DIGITAL TRANSISTOR		
Q11 ,12		*	2SB891F11	TRANSISTOR		
Q13			DTC124EK	DIGITAL TRANSISTOR		
Q14 -17			2SB1188	TRANSISTOR		
Q18			2SA1037K	TRANSISTOR		
Q19 ,20			DTC124EK	DIGITAL TRANSISTOR		
Q21		*	FMA1	TRANSISTOR		
TS1		*	W02-0773-05	SENSOR		
MECHANISM ASS'Y (X92-1180-00)						
1	1B		A10-0964-03	CHASSIS CALKING ASSY		
2	2D		A10-0966-03	CHASSIS CALKING ASSY		
3	3D		A10-0968-03	CHASSIS CALKING ASSY		
4	2A		A10-0970-03	CHASSIS CALKING ASSY		
5	3D		A10-0972-02	CHASSIS CALKING ASSY		
6	1B		A10-0974-03	CHASSIS CALKING ASSY(CD PLATE)		
10	1D	*	B38-0078-05	LED DISPLAY ASSY (DOOR)		
14	1D	*	D10-1845-04	ARM ASSY (C LOCK ARM R)		
15	1D	*	D10-1846-04	ARM ASSY (C LOCK ARM L)		
16	2C	*	D10-1847-04	ARM (BRAKE ARM R)		
17	1C	*	D10-1848-04	ARM (BRAKE ARM L)		
18	1C	*	D10-1849-04	SLIDER ASSY (CASET R)		
19	2D	*	D10-1851-04	SLIDER ASSY (CASET L)		
20	2B	*	D10-1853-04	SLIDER ASSY (C GUIDE R)		
21	2B	*	D10-1855-04	SLIDER ASSY (CASET B)		
22	2C	*	D10-1857-04	SLIDER ASSY (C GUIDE L)		
23	2D	*	D10-1859-04	SLIDER ASSY (D10-1857-04)		
24	2A	*	D10-1861-04	ARM ASSY (LID AR)		
25	2B	*	D10-1863-04	SLIDER (LID PLATE BR)		
26	2C	*	D10-1864-04	ARM ASSY (LID AL)		
27	2C	*	D10-1865-04	SLIDER (LID PLATE BL)		
28	2D	*	D10-1866-04	ARM ASSY (DOOR ARM)		
29	3D	*	D10-1868-04	SLIDER (DOOR)		
30	2C	*	D10-1873-04	SLIDER ASSY		
31	2B	*	D10-1875-04	SLIDER ASSY		
32	3C	*	D10-1877-04	ARM ASSY (TENSION)		
33	3B	*	D10-1879-04	SLIDER ASSY (L RING T)		
34	3B	*	D10-1881-04	LEVER ASSY (L PLATE B)		
35	3B	*	D10-1884-04	SLIDER ASSY (L RING S)		
36	3B	*	D10-1886-04	LEVER ASSY (L PLATE A)		
37	2B	*	D10-1888-04	LEVER ASSY (RING HOLDER)		
38	1C	*	D10-1890-14	ARM ASSY (PINCH ARM)		
39	2B	*	D10-1912-04	ARM ASSY		
40	1C	*	D10-2012-04	ARM		
42	3D	*	D13-0391-04	GEAR ASSY (CL GEAR A)		
43	3D	*	D13-0392-04	GEAR (CL GEAR B)		
44	3D	*	D13-0393-04	GEAR		
45	1B	*	D13-0394-04	GEAR ASSY (LOADING R)		

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46	2D	*	D13-0396-04	GEAR (LOADING A)		
47	2D	*	D13-0398-04	GEAR ASSY (LOADING L)		
48	3B	*	D13-0608-03	GEAR ASSY		
49	1C	*	D14-0174-04	ROLLER ASSY		
50	2B,2C	*	D14-0176-04	ROLLER ASSY		
51	1B,1C	*	D14-0178-04	ROLLER		
52	3B	*	D16-0151-04	BELT		
53	2C	*	D16-0152-14	BELT		
54	3C	*	D19-0086-04	CLUTCH ASSY		
55	2A	*	D21-1281-04	SHAFT ASSY		
56	1C	*	D21-1321-04	SHAFT		
57	1D	*	D21-1322-04	SHAFT		
58	1D	*	D21-1323-04	SHAFT		
59	1D	*	D21-1327-04	SHAFT		
60	1C,1D	*	D30-0017-04	BRAKE (CASET)		
61	1B,2B	*	D32-0143-03	STOPPER		
66	2D	*	F07-0511-23	COVER		
67	2D	*	F10-0624-14	SHIELDING PLATE		
71	1D	*	G01-1984-04	TORSION COIL SPRING(LOCK ARM R		
72	1D	*	G01-1985-04	TORSION COIL SPRING(LOCK ARM L		
73	1C	*	G01-1986-04	TORSION COIL SPRING(PINCH ARM)		
74	1C,2D	*	G01-1988-04	EXTENSION SPRING(BRAKE)		
75	2B,2C	*	G01-1989-04	EXTENSION SPRING(LID PLATE)		
76	1A,3D	*	G01-1990-14	EXTENSION SPRING(LOADING)		
77	1B	*	G01-1991-04	TORSION COIL SPRING		
78	1D	*	G01-1993-04	TORSION COIL SPRING(DOOR)		
79	3C	*	G01-1994-04	EXTENSION SPRING		
80	3B,3C	*	G01-1995-04	EXTENSION SPRING		
81	2B	*	G01-1996-04	COMPRESSION SPRING(ROLLER)		
82	3B	*	G01-1997-04	TORSION COIL SPRING(TAPE GUIDE		
83	2C	*	G01-1998-04	EXTENSION SPRING		
84	1D	*	G09-0074-04	FORMED WIRE		
85	2B,2D	*	G09-0075-04	FORMED WIRE		
86	2B	*	G11-1226-04	CUSHION (13X13XT3)		
89	3B	*	J25-5518-04	PRINTED WIRING BOARD(FPC)		
90	1B,2B	*	J10-0206-04	FLANGE (MULTI C)		
91	1D	*	J19-2754-04	HOLDER ASSY		
92	1C		J19-2756-03	HOLDER ASSY		
93	2C	*	J19-2759-04	BRACKET		
94	1C	*	J19-2760-14	HOLDER		
95	3C	*	J19-2776-04	HOLDER ASSY		
96	2B	*	J21-3923-04	HEAD MOUNTING HARDWARE		
97	3D		J21-3964-04	MOUNTING HARDWARE		
98	2B	*	J21-5055-03	MOUNTING HARDWARE		
99	1C,1D		J31-0291-04	COLLAR		
100	1C,2D		J31-0292-04	COLLAR		
101	1C,2D		J31-0293-04	COLLAR		
102	1C,2D		J31-0294-04	COLLAR		
103	3B,3C	*	J31-0295-04	COLLAR		
104	1D		J31-0499-04	COLLAR		
105	3C		J32-0311-04	HEXAGON BOSS		
106	3A	*	J32-0312-04	HEXAGON BOSS		
107	3A	*	J39-0125-04	SPACER		

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108	1C	*	J90-0180-03	GUIDE		
109	1C	*	J90-0181-03	GUIDE		
110	1A,2C		J25-5521-03	PRINTED WIRING BOARD(FPC)		
111	2A		J25-5519-03	PRINTED WIRING BOARD(FPC)		
112	2A	*	J25-5522-02	PRINTED WIRING BOARD(FPC)		
-			J61-0067-05	WIRE BAND		
		*	N10-2020-46	HEXAGON NUT		
113	1C	*	N14-0175-14	FLANGE NUT		
114	1B,1C	*	N14-0176-05	HEXAGON NUT		
115	2B,3B		N19-0374-04	FLAT WASHER		
116	3D		N19-0375-04	FLAT WASHER		
118	1A,1C	*	N19-1071-04	FLAT WASHER		
119	3B,3C	*	N19-1074-04	FLAT WASHER		
120	3B,3C		N29-0204-04	RETAINING RING (Ø1.2)		
121	1C,1D		N29-0205-04	RETAINING RING (Ø1.5)		
A	2B,2C	*	N09-1771-05	MACHINE SCREW		
B	1B,2B	*	N09-1773-05	MACHINE SCREW		
C	1B	*	N09-1775-05	MACHINE SCREW		
D	3B	*	N09-1776-05	MACHINE SCREW		
E	1A,2B		N09-1818-05	MACHINE SCREW		
1 -4	1A,2C		S50-1039-05	MICRO SWITCH		
S5	2C	*	S42-1022-05	MULTIPLE PUSH SWITCH		
S6	2B	*	S29-1145-05	ROTARY SWITCH		
S7	2C	*	S42-1021-05	MULTIPLE PUSH SWITCH		
125	1C	*	T34-0322-05	RECORD/PLAYBACK HEAD		
M1	3C	*	T42-0421-05	MOTOR ASSY		
M2	3B	*	T43-0050-05	DIRECT DRIVE MOTOR(CAPSTAN)		
M3	2C	*	T43-0051-05	DIRECT DRIVE MOTOR(REEL)		
M4	3B	*	T42-0420-05	MOTOR ASSY (GEAR ASSY)		
PH1 ,2	2B,2C	*	T95-0038-05	OPTO ISOLATOR		
130	2B	*	W02-0771-15	SENSOR		
AM TUNER (W02-0667-05)						
D1 -3			SVC321	DIODE		
D1 -3			1SV149	DIODE		
FET1			2SK163	FET		
FET1			2SK523	FET		
TR1 -3			2SC2619	TRANSISTOR		
TR1 -3			2SC2716	TRANSISTOR		
TR1 -3			2SC2814	TRANSISTOR		
FM FRONT-END (W02-0768-05)						
D1			1SV172	DIODE		
D2 -5			1SV103	DIODE		
FET1			3SK126	FET		
SCREW SET (N99-0212-25)						
-			N09-1416-05	SEMS SCREW (Ø5X16)		
-			N09-1885-05	SEMS SCREW (Ø4X8)		
-			N14-0156-05	FLANGE NUT (M5)		
SCREW SET (N99-0248-15)						
-			N09-1572-05	FLAT SCREW (Ø4X6)		
-			N09-1885-05	SEMS SCREW (Ø4X8)		

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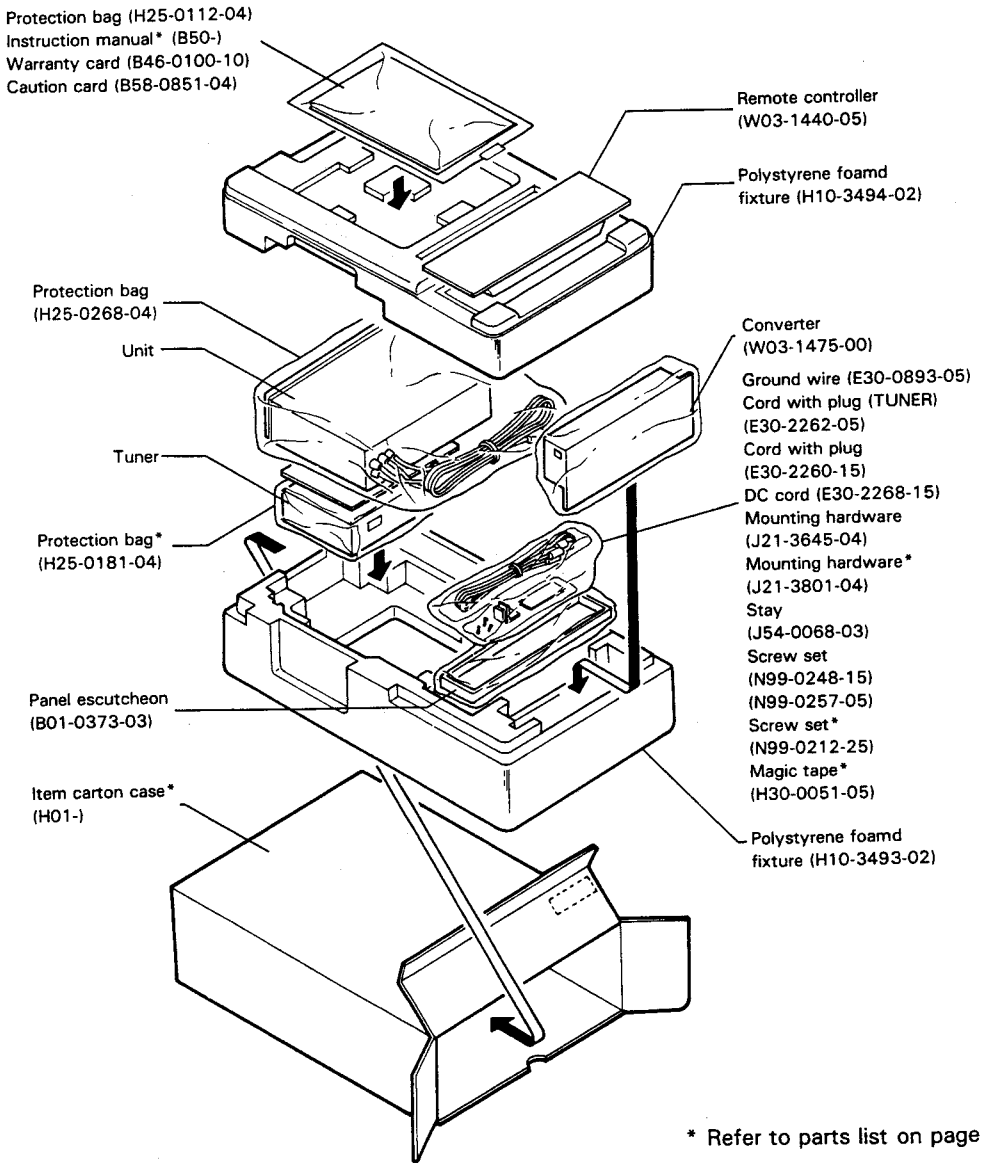
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Telle ohne **Parts No.** werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
SCREW SET (N99-0257-05)						
			N44-4012-46	SCREW		

E: Scandinavia & Europe K: USA P: Canada
U: PX(Far East, Hawaii) T: England M: Other Areas
UE: AAFES(Europe) X: Australia

⚠ indicates safety critical components.



* Refer to parts list on page 94.

KDT-99/99R

SPECIFICATIONS

FM Tuner Section (KDT-99R ONLY)

Frequency range	87.9 MHz ~ 107.9 MHz
Channel Space	200 kHz
Usable Sensitivity	12.0 dBf (1.1 μV/75 ohms)
50 dB Quieting Sensitivity	15.2 dBf (1.6μV/75 ohms)
Frequency Response (± 1 dB)	30 Hz-15 kHz
Signal to Noise Ratio (IEC-A)	75 dB
Alternate Channel Selectivity	80 dB
Capture Ratio	1.5 dB
Image Response Ratio	70 dB
IF Response Ratio	75 dB
Stereo Separation (1 kHz)	40 dB

AM Tuner Section (KDT-99R ONLY)

Frequency Range	530 kHz ~ 1620 kHz
Channel Space	10 kHz
Usable Sensitivity	28 dBμ

DAT Section

Head	Rotary Type
Sampling Frequency	44.1 kHz, 48 kHz
D-A Conversion (Linear)	16 bit
Tape Speed	8.15 mm/s
Wow and Flutter	Below Mesurable Limit
Frequency Response	10 Hz-20 kHz (± 1 dB)
Total Harmonic Distortion (1 kHz)	0.005%
Signal to Noise Ratio (IEC-A)	92 dB
Dynamic Range	92 dB

Audio Section

Tone Action (BASS)	± 10 dB (100 Hz)
(TREBLE)	± 10 dB (10 kHz)
Preamp Output	Normal: 300 mV/10 k ohms load
	High: 1.0 V/10 k ohms load

General

Operating Voltage (GND)	14.4 V (11-16 V allowable)
Current Consumption (PLAY)	2.0 A at Rated Power
Body size (W × H × D)	180 × 50 × 155 mm
	(7-1/16 × 1-15/16 × 6-1/8 in.)
Weight	2.6 kg (5.7 lb)
Operating temperature lange	0°C ~ +60°C

Kenwood follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Kenwood poursuit une politique de progrès constants en ce qui concerne le développement. Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

Kenwood strebt ständige, Verbesserungen in der Entwicklung an. Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

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